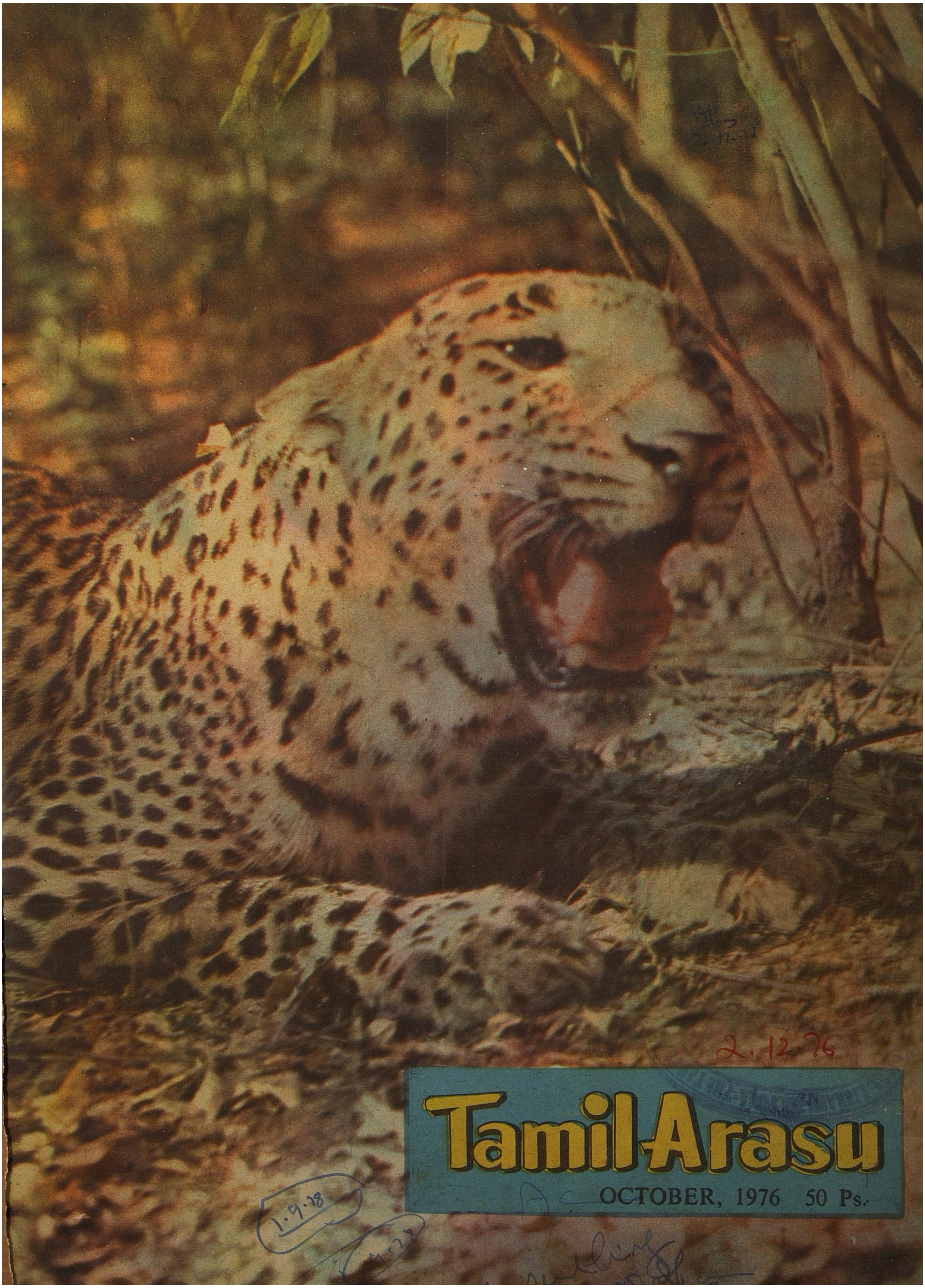

Tamil Arasu
OCTOBER, 1976 50 Ps.

PRESERVATION OF WILD LIFE
GOVERNOR'S APPEAL

Wild Life and its habitat are held in trust for posterity. Mankind has encroached upon the habitat in its search for food and natural resources, and through increasing economic and social activity. Despite the knowledge that the flora and fauna were being irretrievably damaged by man's encroachments, and his unthinking destruction of many "desirable" species, warnings were not heeded. We have seen species disappearing from our beautiful earth, before our very eyes.

It is not long since we woke up to reality, and to the call of duty. We have been observing the Wild Life Week in October every year to remind us of the need for the conservation and preservation of wild life. This year, we in Tamil Nadu are making a special effort in this direction. We have set up a sanctuary in Kalakadu Reserve Forest in Tirunelyeli District to protect the rare Lion-tailed Macaque. We have also decided to declare the Guindy Park in Madras as a National Park for protecting wild life in an area which is one of the few coastal tropical forests in the country, and where we find a very large variety of plant and animal life, characteristic of such forests, including the Black Buck and the Spotted Deer. We have also intensified supervision over our forest areas and sanctuaries.

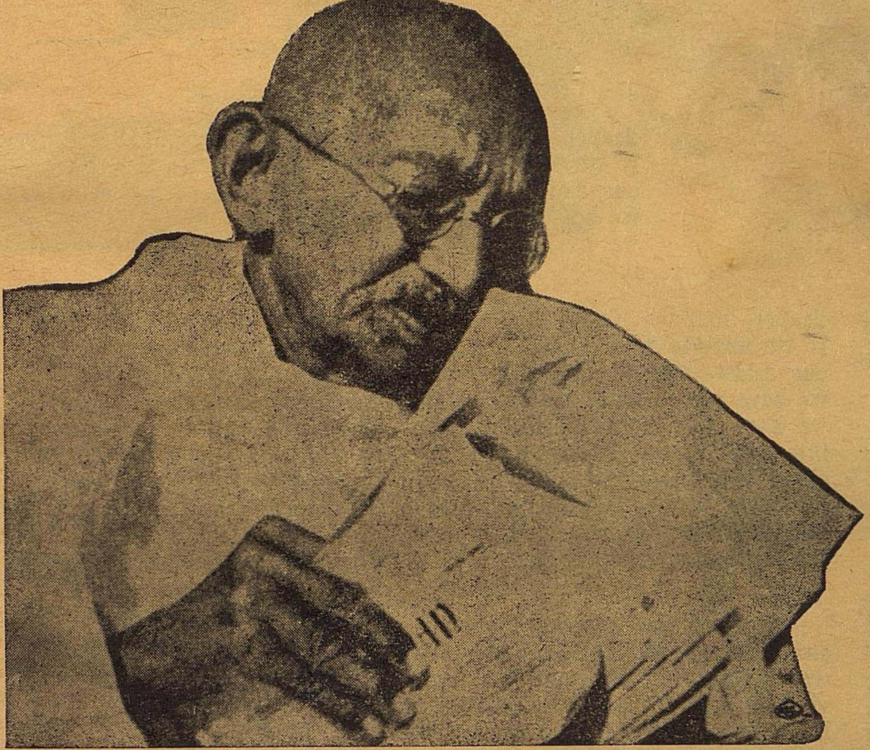
I appeal to the people of the State to give greater attention to the cause of wild life preservation. This appeal is especially directed towards the youth, who will hold the trust for posterity ; they must develop love of wild life which is not animals alone, but includes bees, butterflies, birds, fish and all aquatic or land vegetation in our habitat. And love of wild life can grow only when knowledge of wild life grows. Here, the teachers have a special duty. They must introduce their students to wild life, its characteristic behavioural patterns, and its natural habitat.

I commend to every citizen of Tamil Nadu, the pledge of the Indian Board for Wild Life.

M. L. SUKHADIA,
Governor of Tamil Nadu

Remove Untouchability; Encourage Khadi

-Gandhiji's Advice to First National Government



On the 2nd September, 1946 the Congress Ministers took office after receiving Gandhiji's blessing at an impressive little ceremony at his residence in Bhangi Colony. For Gandhiji it was a day of deep heart-searching. In the early hours of the morning, whilst most slept, he scribbled a short message for the members of the new Government, to remind them that they must not in the hour of fulfilment forget to redeem the pledges which they had made when the Congress was in the wilderness.

At the appointed time in the morning, the Ministers arrived. They were received by the lady members of Gandhiji's entourage with garlands of handspun yarn. The message which Gandhiji had written out for them in the morning, it being Monday his day of weekly silence, was read out to them. It was his " instrument of instructions." Brief to the point of baldness, it ran : " You have been in my thoughts since the prayer. Abolish the Salt Tax. Remember the Dandi March. Unite Hindus and Muslims. Remove untouchability. Take to Khadi."

—'Mahatma Gandhi *Last Phase*' by Pyarelal

GANDHI'S CHOICE

A big financier, a captain of business, put this question to Gandhiji once : "Do you want me or my money to the Nation's cause."

"You," was the straight reply.

What task would you assign me if I left off business and joined you?"

"The Spinning Wheel," replied Gandhiji as he plied the Charkha.

SECRET OF HIS SUCCESS

What was the secret of Gandhiji's power ? He himself answered once :

"The Secret ?
A Clear heart,
A Clear conscience,
A Cool head,
Regular communion with God,
Abstention from carnal food and pleasure,
No alcohol, smoking and condiments,
A strict vegetarian diet,
And love for all my fellow-men."

(Source : "This was Bapu" a Compilation of Anecdotes by R. K. Prabhu)

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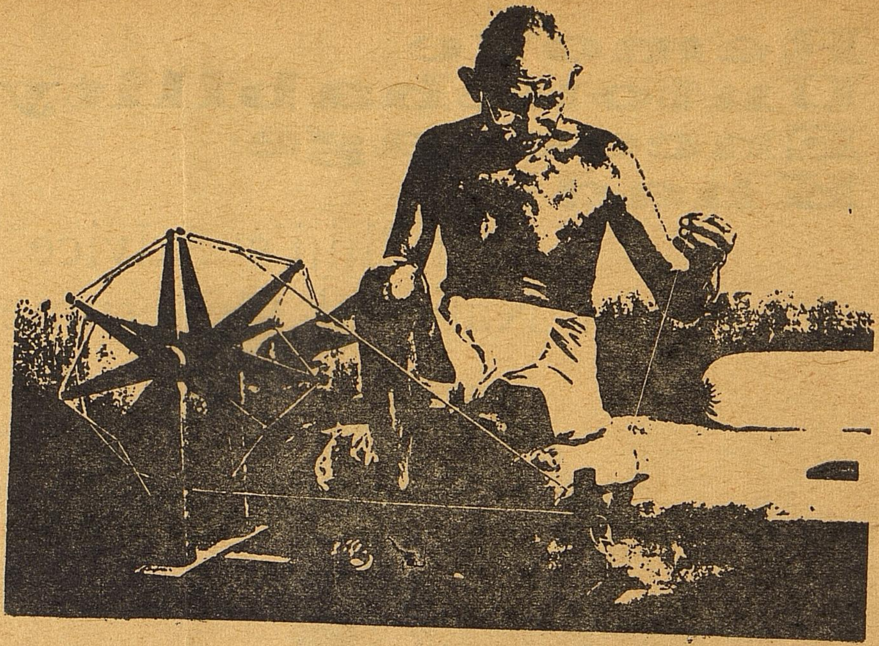
OCTOBER 1976

WE RUN INTO DIFFICULTIES WHENEVER WE MOVE AWAY FROM GANDHIJI



Governor SUKHADIA'S Reminder On Gandhi Jayanthi Day

Following is the text of the speech of the Governor of Tamil Nadu, Thiru Mohanlal Sukhadia, telecast by the Television Centre, Madras on the occasion of Gandhi Jayanthi, on October 2, 1976 :

"It is nearly three decades since Gandhiji left us. During this period we have seen the gradual waning of his influence upon the life of the country. This was a process which started almost at the time of our Independence, some when people felt that Gandhiji's work had served its main purpose, when our freedom had been won and had thereafter become superfluous. The country revered him as the Father of the Nation and the architect of our Independence, but we did not generally follow his ideals or aim to build the type of society that he envisaged. We felt that he was an idealist who made no allowances for the ordinary run of human beings ; that his principles and his vision of India were unrelated and even antagonostic to contemporary needs and aspirations.

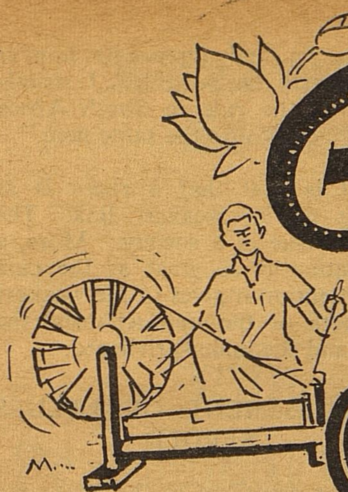
However, today, if we observe carefully, we see a change in our attitude to Gandhiji. Many thinking people in our country have come to feel that Gandhi was a greater realist than they had imagined and that he knew the country and its people in a much closer and deeper manner than others did. **If we analyse what is happening in our midst, we will find that where we have moved away from Gandhiji we have run into difficulties.** The intensely practical nature of his creed becomes aparent to us, and his own ideas become strangely alive and relevant to us today, after the lapse of so many years.

One of the important cornerstones of Gandhiji's life and work was his absolute insistance on non-violence and truth in all spheres of life. In restrospect, that he should have used non-violent means to win freedom for the country is one of the most remarkable achievements in our contemporary history. All circumstances and all known precedents were against it. Yet it is a matter of history how non-violence triumphed against the armed might of the most powerful empire that the world had ever seen. When Gandhiji entered the Independence movement, the British were firmly entrenched as the unquestioned rulers of India. They had built up an empire over which they boasted that the sun never set. They were imperialists with no idea of relinquishing their hold on their colonies. They had conquered India by force and were prepared to hold it by force.

It was in such a situation that Mahatma Gandhi devised a weapon which was to prove stronger than the military might of the British. Had the main fight for Independence proceeded along violent means, it would not have been difficult for the British to crush it. Their weapons and their capacity for organising counter measures, with the entire strength of the Government at their disposal would have been far superior to anything which local effort could have produced. They would have then operated on familiar and known grounds, and matched force with greater force. But what confronted them was something totally different. They did not understand the spectacle of millions of unarmed men, and even women and children bravely facing the bullet and the lathi, without striking back or even attempting to defend themselves, but going down with a smile on their faces and cheer in their hearts. This was something which they did not know how to fight. It unnerved them. It was a force for which they had no answer.

Let it not be imagined that Gandhiji resorted to non-violence because the people of India were cowardly and incapable of violence. quired qualities of courage, endurance and self-sacrifice of the highest order. As Gandhiji himself wrote : "Non-violence does not mean weak submission to the will of the evil doers, but it means the pitting of one's whole soul against the will of the tyrant . . . and so I am not pleading for India to practise non-violence because she is weak. I want her to practise non-violence being conscious of her strength and power."

GANDHI JAYANTHI IS CHARKA JAYANTHI



Today, more than ever, we realise the need for non-violence in national and international life. Taking our own country, let us study the back-ground to the declaration of Emergency. Respect for law was thrown to the winds and all anti-national and anti-social elements resorted to violence to bring pressures on the Government. Following the declaration of Emergency, we have seen how necessary it is to enforce discipline in all fields of national activity and create a climate of peace to ensure increased production.

Discipline, hard work and non-violence should become a way of life. Stringent laws to regulate the society should be replaced by self-restraint. There were leaders in Tamil Nadu who were in the forefront of the freedom struggle. Time has come when the people have to rise above region, caste and language and play a bigger role. We are passing through a difficult transitional period ; and if the implications are not properly understood, even independence may be in danger. Gandhiji gave us freedom. Now it is the duty of all of us—and particularly the younger generation — to see that not only freedom is safe, but our masses get freedom from poverty, hunger and ignorance and we build a strong country. Then alone we would be able to claim Mahatma Gandhi as the Father of the Nation.

Let us, on this occasion, take a solemn vow that we shall solve all our problems, either in relation to internal affairs or international affairs, only through non-violence. This is the best homage that we can pay to the Mahatma.

Vanakkam.

Jai Hind.

CELEBRATION ONLY FOR REVIVAL OF SPINNING WHEEL

To Gandhiji the spinning-wheel was a symbol and means of identification with the dumb millions. They were his first care and his last. For, he recognised no God "except of God that is to be found in the hearts of the dumb millions." The significance of the spinning-wheel had flashed upon him in a moment of intuition in South Africa, even before he had seen one, and in fact did not know a spinning-wheel from a handloom. Even in India, it was on the point of extinction when he arrived on the Indian scene. He had tried ever since to resurrect it for over a quarter of a century with his life-blood.

ASKED WAVELL TO IDENTIFY HIMSELF WITH SPINNING-WHEEL

The seventy-seventh birthday of Gandhiji fell on the 2nd October, 1946. It brought a shower of greetings from all over the world. One of the most touching, perhaps, was from Lady Pethick-Lawrence :

" Gandhiji ", she wrote, " the month of October brings the anniversary of your birth into this world of conflict—conflict between powers of good and evil. May you see during the coming year still further fulfilment of your prophetic vision . . .Our inspired poet William Blake wrote :

' I give you the end of a golden string
Only wind it into a ball,
It will lead you in at Heaven's gate
Built in Jerusalem's wall."

" Jerusalem' was the symbol used by Blake of his vision of the Kingdom of Heaven which, he believed, would be finally established on earth and his golden thread was the practice of forgiveness.

" And you also have put this thread in our hands, which is for each of us to unwind in our day-to-day practice the thread which will bring us safely through the intricate maze of circumstances and release us into the ' Kingdom of Heaven.'

" Your life and being have enriched the human race and will always remain as part of the Light which shines in the darkness. May all faith and joy be yours at the time of the celebration of your birthday.

To it Gandhiji replied ': 'Have you ever noticed that my ball is an unending ball of cotton thread instead of Blake's ' golden string '? Blake's was the imagination of a poet, mine can become now and here the gateway to heaven if the billions of the earth will but spin the beautiful white ball of the slender and unbreakable thread !"

In reply to Lord Wavell's message of greetings, he wrote : " The birthday began to be observed only when it became identified with the revival of the spinning-wheel in its modern form, making it the symbol of freedom of the masses through constructive means. Can you in any way identify yourself with the rebirth of the wheel ?"

Source : ' MAHATMA GANDHI— LAST PHASE '

by *Pyarelal.*

MAHATMA GANDHI

By

HIS EMINANCE VALERIAN CARDINAL GRACIAS, ARCHBISHOP OF BOMBAY

The celebration of the birthday of Mahatma Gandhi is no ordinary occasion. It is certainly not merely an occasion to sing the praises of the Mahatma. For, the message of Gandhiji is perennial. It is a message that rises from the soul of India, to which Gandhiji, by the unique manner of his life, gave utterance.

Time heals wounds and the passage of years dims the sharpness of memory. A whole new generation has grown up after the death of Mahatma Gandhi, and for the ones, who were his contemporaries or who had the privilege of knowing, hearing him or living in his age, his life, what he lived, fought and died for, are a comforting memory.

Contemporary society, with its stress on technology and the scientific temper, has slowly come under the influence of pragmatism and a materialistic view of life and society. Principles of morality are discarded for the sake of convenience. While materially we have gained so much in society, we have also perhaps tended to deflect from the ideals that Gandhiji put before the nation.

A COLOSSUS

The Mahatma, who bestrode the Indian scene like a colossus for so many decades, was not merely a giant personality, albeit in a diminutive body. In a way, he epitomised the Indian spirit, the true spirit of India, which lays stress on the spiritual and the eternal. That is what made him a great leader in the political field, towering over all the others that surrounded him.

He brought to politics the light and vision that comes from the spirit and the spiritual. With that vision, he could diagnose the ailments of society, with his love he could heal, and with that inner light of truth he was able to guide us towards our true goal. The lessons he taught, are not mere valid, they are essential in our day.

His passion for the unity of all communities, whether the divisions were based on religion or on caste, or any other unessential aspect of life or society, is a vital need today. Differences which exist, do not disappear merely by refusing to look at them or by denying that they exist. Rather, as the Mahatma pointed out, differences are overcome by finding the "underlying reality and unity, our common bonds, and approaching them with love and understanding."

SATYAGRAHA DEFINED

This is also the true meaning of secularism, it does not mean denying religion. That would be to throw out the baby with the bathwater. But religion must not be a factor that divides or destroys. True religion does not divide but preserves and unites.

The process of the unification of our country will not ever until the ideals of equality and brotherhood are translated into a living reality, when we see ourselves as one, not merely on account of national boundaries or culture or language, citizenship or rule, but because of the identification of fraternal love as Gandhiji showed.

With the growing taste for violence as misguided protest and as a way of life, the doctrine of Satyagraha and non-violence of Mahatma Gandhi perfected through so much physical pain and mental anguish, must be recalled and studied carefully not only for the ills of the Indian society but as measures for world harmony and peace. These are the only answers and solutions, perhaps, to the suicidal areas race and the world tottering on the brink of war.

The spirit of the true Satyagrahi is best revealed in Mahatma Gandhi's reply to the invitation of the Governor of Bombay on one occasion. "I can very easily give the promise in as much as it is my rule as a Satyagrahi," Gandhiji said, "to understand the view-point of the party I propose to deal with, and to try and agree with him as far as may be possible. I strictly observed the rule in South Africa and I mean to do the same here."

It is said that a chain is as strong as its weakest link. The same is true of a society. More, a civilisation is as great as the care and attention it gives to the weakest members of the untouchables, the poor and the under-privileged.

RE-ASSESSMENT OF VALUES NEEDED

The greatness of the Mahatma cannot be understood or evaluated without taking into account his concern and devotion for the weakest of the weak. That probably explains the great admiration of our people for Mother Theresa and many like her who are spending themselves for the poorest of the poor.

A person is more than a thing, and for that reason, principles are more important than possessions. We must create conditions for everyone to grow to his or her full stature as a human person — a child of God— a true 'Harijan'.

This is not brought about merely by legislation or even handsome donations to charitable causes. It entails a whole new attitude to others, a fundamental respect for life and for the freedom, integrity and equality of every person — it involves not merely a giving of something with generosity.

We ourselves must be involved, each one of us, in truth, generosity and love are not measured by how much is given, but how little is left for ourselves.

It was the ambition of Mahatma Gandhi, 'the greatest man of our generation,' to quote Jawaharlal Nehru, 'to wipe every tear from every eye.' 'That task,' Nehru admitted, in his famous speech on August 15, 1947, "may be beyond us."

But so long as there are tears and suffering, so long our work, will not be over, and so long, will we constantly need to recall with affection and pride, the memory of the Father of the Nation, whose Birth Anniversary we commemorate.

—Courtesy : A. I. R. 'SPOTLIGHT'

Rural Water Supply Gets Urgent Priority

6,700 Villages Secure Permanent Drinking Water-Supply In 6 Months

By :
K. MADHAVA SHARMA, I. A. S.,
Managing Director,
TWAD BOARD.

Never before have so many bore-wells been sunk in so short a time.

Tamil Nadu Water Supply and Drainage Board has covered more villages in last six months than it did in all of previous five years.

Stark famine for drinking water would have been the dire fate of people in 9,300 villages in Tamil Nadu during the last summer commencing from April, 1976. Thanks to the determined initiative of the State Government and helpful co-operation from all parts of India. 6,700 of these problem villages have been found a permanent solution to their drinking water problem with the sinking of as many bore-wells in the last 6 months between April and end of September. The rest of the water-scarcity villages have been taken care of with the usual deepening of wells etc.

This massive drive to find drinking water to so many villages called for sophisticated methods and equipment, some of which were found by the UNICEF. 25 geological teams mapped the entire area and then after a country-wide hunt for drilling rigs 180 hard-rock drills and drilling teams were assembled and mobilised for the work. And now by end of September at a cost of Rs. 7 crores, each well costing Rs. 12,000 on an average, the drinking water problem of 6,700 villages have been solved on a permanent basis.

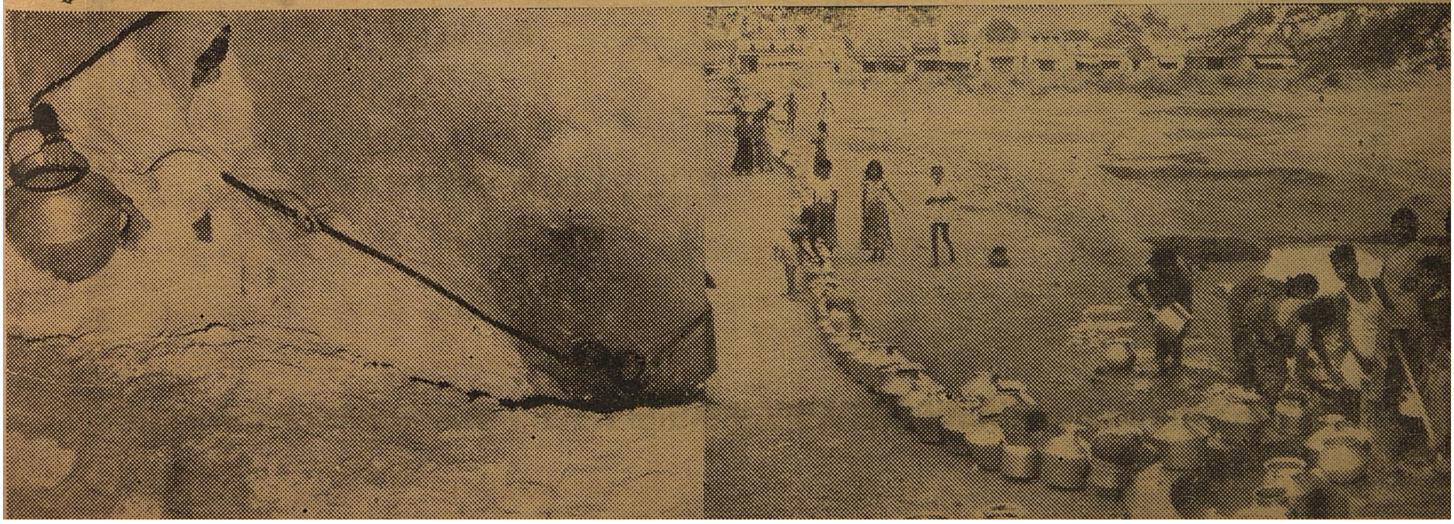
Since the details of drinking water situation in all the villages in Tamil Nadu is still not clearly known, the Government have decided to survey the drinking water sources available in each habitation by field enquiry and the results will be computerised to enable quick classification of villages according to its drinking water needs. Based on this survey, the habitations will be classified suitably and a comprehensive plan evolved to provide drinking water supply to scarcity and endemic areas in a time bound schedule.

In Tamil Nadu, nearly 2.56 crores out of 4.11 crores of people live in Rural areas. The Rural population is scattered in 58,595 villages and hamlets.

The North East Monsoon failed in 1974 in almost all the Districts of the State and the result was a drought situation of unprecedented intensity. The Monsoon again failed in 1975 in several parts of the State, causing grave distress to the population. The drought was particularly severe in the Southern Districts of Tirunelveli, Ramnad and Madurai and was prevalent in parts of Coimbatore, Salem, Pudukottai, Trichy, South Arcot, North Arcot and Dharmapuri. The drought conditions have spread even to the 'Rice bowl' District of Thanjavur, with the disappointing monsoon in the catchment area of Cauvery and consequent non-release of water to ayacut areas in parts of Thanjavur. The effect of the drought was keenly felt in acute scarcity of drinking water supply as the open wells had completely gone dry. Immediate relief was urged by the people and was accepted by the Government as necessary.

However, the question was, whether to adopt the immediate solution of deepening drinking water wells and affording temporary relief as urged by several people or to provide some type of permanent relief. During last year's drought a large number of drinking water wells had been deepened and did provide temporary relief. How-ever this year's experience had shown that this expenditure did not give any subsequent drought. On the

Village People had to scoop out water in some places and followed the Q Line to get the Drinking-Water generally



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P. K. PATHMANATHAN, B.A., H.D.C.,
Joint Registrar / Special Officer

other hand, providing a permanent solution meant digging deep bore-wells in these drought affected villages which will provide water even in time of scarcity when the water table goes down very much. It was estimated that nearly 9,300 villages and hamlets required relief and that in about 3,000 villages, the problem could be solved by deepening the wells. The provision of deep borewells to the rest of the 6,300 villages, however, meant enormous cost of more than Rs. 7 crores. Further the sinking of deep borewells requires drilling rings capable of going deep and doing fast work, if relief is to reach people quickly. **After considering all these factoral the Government have boldly gone in for the solution of providing permanent relief against drinking water scarcity in future drought periods to these villages by opting for a programme of 6,700 deep borewells to be completed before 30-9-1976.** One of the factors which led to this decision is that several of these drought affected villages are perpetual scarcity areas and endemic for water borne diseases like guinea worm, cholera etc. These deep borewells, by providing protected water, will also prevent occurrence of water-borne diseases. The programme was entrusted to the TWAD Board.

The TWAD Board, on entrustment of the task, has proceeded in a systematic manner to complete its target.

The basic geological formation of Tamil Nadu is as follows :

Quaternary : Recent and pleistocene—Alluvial formation.

Tertiary: Sand stones, clays, clay bounded sands shales and lignite.

Cretaceous : Lime stones and argillaneous sand stones.

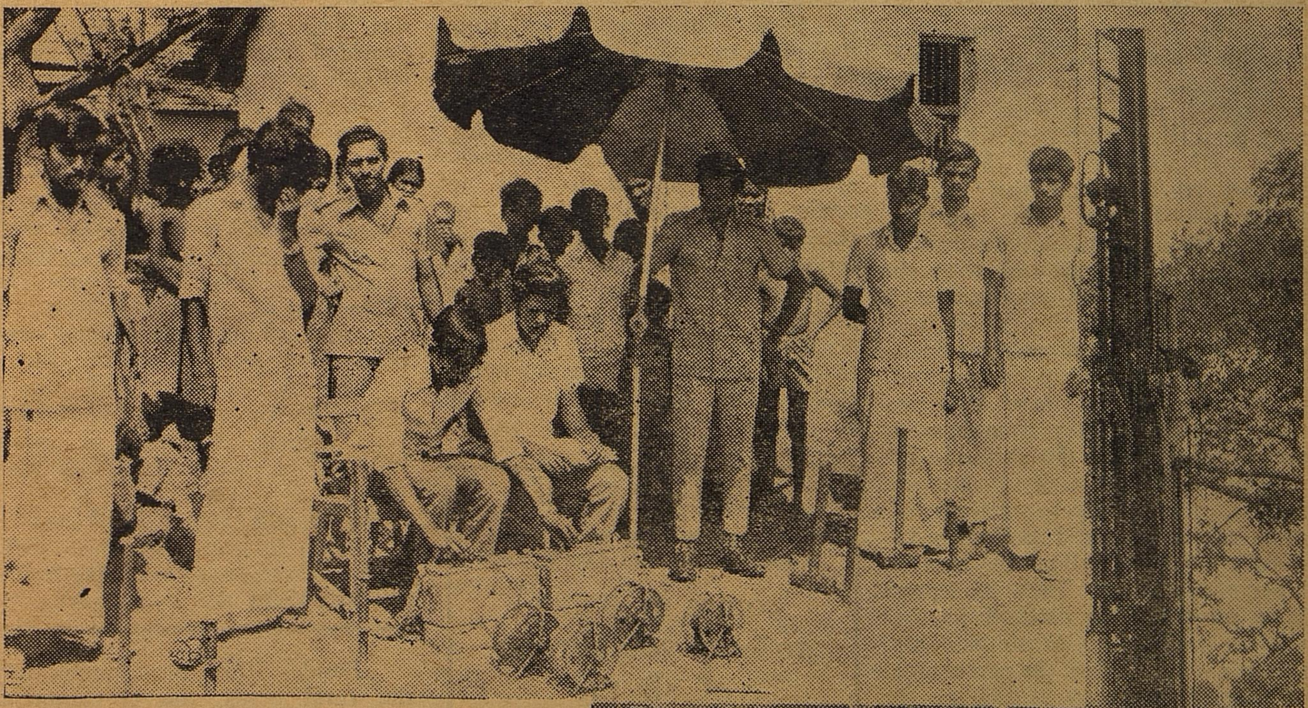
Gondwanas : Conglomerates, shale and clay.

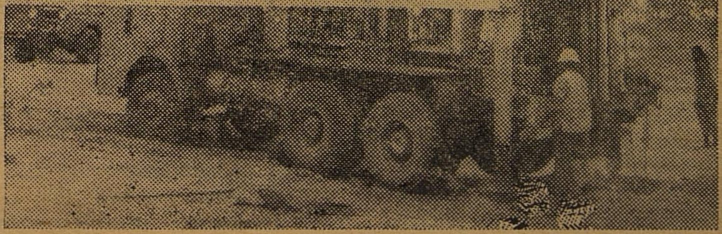
Archaean : Granite, charnockites and gneisses.

Areas covered by various Geological Formations in Tamil Nadu

Description	*Area in Sq. Km.*	*Percentage of whole area*
1. Archaean	95,677	73.4
2. Sedimentaries:		
a. Gondwanas	2,513	1.9
b. Cretaceous	1,513	1.2
c. Tertiary	8,746	6.7
d. Quaternary Alluvium	21,908	16.8
Total area of State (including Pondicherry)	1,30,357	100.00

Of these formations, the Archaean formations which cover 73% of Tamil Nadu area are not good





A team of geologists find-out the availability of water by means of geophysical survey at Nottarpatti village of Keelapavoor union,

water bearers ; but some quantity of ground water could be expected in weathered mantle fissures and faulted surfaces. In the rest of the formations, the ground water availability for drinking water purposes is fair. Since most of the area in drought affected areas, consisted of Archaean formation, Geo-physical surveys to locate ground water were considered essential. Traditional water diviners were not considered reliable for this purpose where such huge investment is being made. The cost of the well on the average is expected to be Rs. 12,000/- and reliance on water diviners for such huge investment was considered improper.

Measurements of the electrical resistivity of the ground was the method adopted by the Tamil Nadu Water Supply and Drainage Board for location of underground water ; 25 geological teams with terrameters or resistivity metres, some of them provided by UNICEF, have been organised to locate sites in the villages affected. The electrical resistivity method is based on the fact that any sub-surface variation in conductivity alters the pattern of current flow in the sub-surface and changes the distribution of electrical potential at the surface. Since the electrical resistivity of over-burden material, bed rock and ore bodies will show considerable variations, the resistivity method may be used to detect these formations and to give their thickness, relative position and their depth under the surface. This method requires the application of an electric current into the ground through the electrodes with measurements thereafter being made with the use of further two or three electrodes. It is the potential drop or apparent resistance between these two or three electrodes that is measured and an analysis of the variation of the apparent resistivity value in respect of electrode separation enables the experienced geologists to draw conclusions about the availability of the water. These 25 teams have adopted this method in the villages affected to locate suitable sites for wells. Thus, the percentage of failures has been as low as 10 which is considered pretty low when compared to that obtaining in other States. This scientific location however leads sometimes to the wells being located slightly away from the main villages. In such cases the Government have agreed that power pumps will be fixed to the bores and water conveyed to the villages to a ground level reservoir. Government have also ordered that subject to geophysical considerations remaining the same, preference should be given to Harijan colonies in sinking borewells.

Having organised the geological teams, the Tamil Nadu Water Supply and Drainage Board had to look for the drilling rigs suitable and necessary all over the country. In all 180 rigs have been mobilised with intense search, from the private sector, various departments of the Government of Tamil Nadu and the Government of Maharashtra, Gujarat, Andhra Pradesh and Karnataka and the Indian Army. The Assistance of Government of India enabled us to buy 13 rigs costing Rs. 1 crore. The drillers from various parts of the country worked day and night in the remote villages of Tamil Nadu and have completed nearly 6,700 borewells so far and are continuing their work to provide more borewells for villages where the borewells done earlier have not yielded adequate water.

In spite of this massive programme of borewells, there are villages in coastal Tamil Nadu where the ground water is saline and these who did not benefit from the programme. These areas are endemic for water-borne areas as the people depend on drinking water ponds for all their water needs. To tackle these areas, the Government have proposed to take up costly comprehensive schemes for provision of piped water supply in certain parts of Ramnad and Tirunelveli Districts where drought is prevalent and where ground water is saline. This is the first time that the Government have attempted such costly schemes for village water supply. Such schemes sanctioned by Government are as follows:

1. 44 villages of Ottapidaram Union in Tirunelveli District at a cost of Rs. 37.359 lakhs covering a population of about 30,000.
2. 100 villages of Ramnad District including the two Town Panchayats of Thondi and Tiruvadanai at a cost of Rs. 106.60 lakhs covering a population of about 80,000.
3. 26 villages of Tuticorin Panchayat Union at a cost of Rs. 38.00 lakhs covering population of 30,500.
4. 36 villages of Vilathikulam at a cost of Rs. 40 lakhs covering a population of 30,000.
5. Sinking of 150 additional borewells with shaft pumps in Coimbatore District at a total cost of Rs. 22.50 lakhs, the cost per well being Rs. 15,000.

With prompt central assistance, the Government of Tamil Nadu have made tremendous impact on the drinking water supply position in Rural areas and in 6 months of this year the Government have provided protected water to as many villages as was done in the previous 5 years, as can be seen from the following figures :

Year	*No. of villages covered*
1971—72	2
1972—73	216
1973—74	947
1974—75	3,775
1975—76	1,908
1976—77 (till 30-9-1976)	6,720

Besides this programme for the rural areas, the Government have sanctioned funds to the Municipalities to tackle the acute water scarcity. This programme also is being executed by the TWAD Board by diversion of the drilling rigs to the extent necessary without affecting the rural water supply programme.

* *

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KALAKKADU WILD LIFE SANCTUARY

Thiru P. KANDASAMY I.A.S.
Secretary,
Forest and Fisheries Dept.

The Lion tailed Macaque

The Wildlife (Protection) Act of 1972 came into force in Tamil Nadu in January, 1974. The first Sanctuary to be notified under Section 18 of this act is the Kalakkadu Wildlife Sanctuary in Tirunelveli District by Gazette Notification issued in G.O. Ms. No. 183, Forests & Fisheries Departments, dated 6th March, 1976. The entire Ka'akkadu Reserved Forest had become a Sanctuary mainly for the protection of Lion-tailed Macaque.

There are very few spots remaining in India that can be called relatively untouched areas, still rich in wildlife without roads and villages. One of the rare places is the Kalakkadu Reserve Forest and adjoining Veerapuli Reserve Forests. The Singampatti forest is already declared as Wildlife Sanctuary for tiger. The Kalakkadu forest is situated on the eastern and top slopes of the Western Ghats, where Tirunelveli and Kanyakumari districts meet. The bouldered foothills with their saw grass and thorny scrub jungle are the habitat of bear, leopards, sambhar and python. Perennial streams flow amidst huge rocks intercepted by a number of waterfalls flanked by mango and jamun trees.

As one ascends above 600 metres, everything starts to change. The lush jungle is no longer confined to the streams in the valleys, the hill sides are adorned with tropical vegetation that become denser and denser as we climb up into the dark sholas. The Sengaltheri is a Rest House at 800 metres elevation by the side of the beautiful stream and evergreen sholas.

All the present shola forests and inaccessible forests may come under Wilderness Zone. The areas are not contiguous and found in isolated pockets and deserve to be preserved as such. The floristic richness of the sholas is no doubt largely due to its great antiquity. It has been the focus of plant and animal evolution for an extremely long time. Resemblances between unrelated species and convergence among species of varied taxonomic affinity with a similar life form are seen here. The liontailed macaque, Nilgiri Langur on one hand resemble in colour pattern to that of Malabar Giant Squirrel.

The Lion-tailed Macaque has a shiny black body and white mane. Though it was commonly seen in the tropical wet evergreen forests of South India in the past, of late, it has nearly become rare by direct killing for its meat which is supposed to be aphrodisiacal and also for its black fur.

The Government of India and the Tamil Nadu Government have taken a keen interest in the preservation of this unique species, in forming a sanctuary for this species in the Kalakkadu Reserved Forests.

Lion-tailed Macaque is an inhabitant of the dense and dark tropical wet evergreen forests at altitudes ranging from 650 m to 1,100 metres. This distribution is restricted to the Western Ghats in Peninsular India from North Kanara of Karnataka to Kanyakumari of Tamil Nadu. Its dark colour and shy habits make it difficult to be noticed for casual observation and hence seldom seen or reported.

The popular " Black Monkey Rasayanam " which is manufactured in Kerala and Tamil Nadu is made out of the meat of this monkey. For this purpose hundreds of these monkeys are killed by the tribals every year.

A Pilot study conducted by a Japanese Scholar from the Labora-

tory of Physical Anthropology, Kyoto University named Mr. Yikumaru Sugiyama during September, 1961 to February, 1963 estimate the population as 1,000 heads in 1963 and there is the possibility that the wild population of Lion -tailed Macaques will become extinct. The number of these monkeys in this tract of Kalakkadu, Papanasam and Veerapuli Reserves at present is about four hundred only. Both the ideal characteristics of the terrain and the nature of the forest is very much suitable for the habitation of the species and it is hoped that this number will increase rapidly by virtue of the protection now afforded.

The other animals living in this tract is very varied. There are carnivores like Tiger, Panther, Hyene Jackals and Wild Dogs ; Herbivores like Elephants, Sambar, Chital, Mousedeer, Barking Deer and Nilgiri Tahr. Also reptiles like Python, King Cobras, and Lizards and also a large variety of birds.

There is abundance of food and water for all kinds of animals. But the limiting factor is the heavy poaching and grazing. Fires may occur but not very severe. Diseases are not prevalent.

The Lion-tailed Macaque is usually moving in troops of 12 to 20 animals. Sometimes lone males or courting couples may be seen. At present in the Kalakkadu Reserved Forest, alone there may be about 100 animals of this species. No definite census was ever done. There are 2 or 3 troops and they are definitely antagonistic. The sex ratio of male and female is 1:3 and the reproduction and population increase is yet to be studied. The longevity and mortality is not known.

Though these animals do not destroy the crops yet they are persecuted. The tribals from Kerala hunt this animal for its meat. Of late the Wildlife Protection Act gives effective protection to this species whether found inside or outside Government lands, as it is one of the species in I Schedule of this Act.

Object of Management

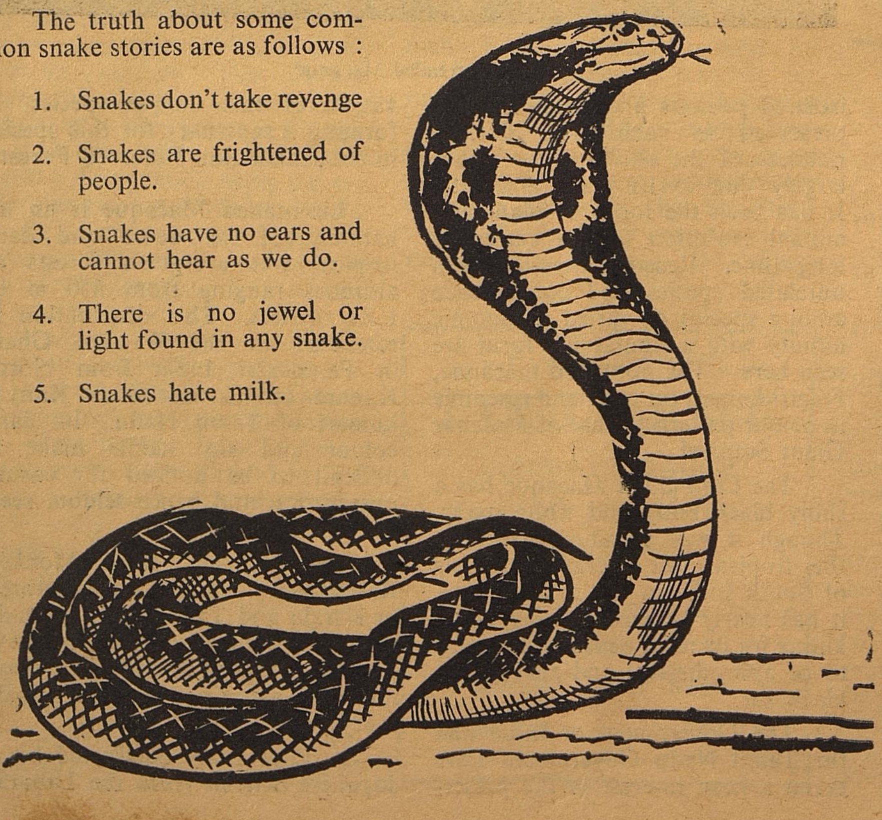
1. It is proposed to protect and improve the population of the lion-tailed macaque, occurring in the sanctuary.
2. To prevent any further destruction of the habitat of this species by felling or clearing the forest growth for plantations or for the tea cultivation or cardamom cultivation.
3. To protect the species by prohibiting the killing of the species for any purpose —sport or medicinal or research.
4. Studying the life history and physiology, food habits, and reproductive nature of this species.

Thus one of the endangered species will be protected and in the process this unique wilderness refuge in Kalakkadu upper-slopes will be saved from the depredation and this will also save the watershed and catchment of the Manimuthar and Thambaraparani rivers in Tirunelveli District. *

SOME SNAKE LEGENDS DISPELLED

The truth about some common snake stories are as follows :

1. Snakes don't take revenge
2. Snakes are frightened of people.
3. Snakes have no ears and cannot hear as we do.
4. There is no jewel or light found in any snake.
5. Snakes hate milk.

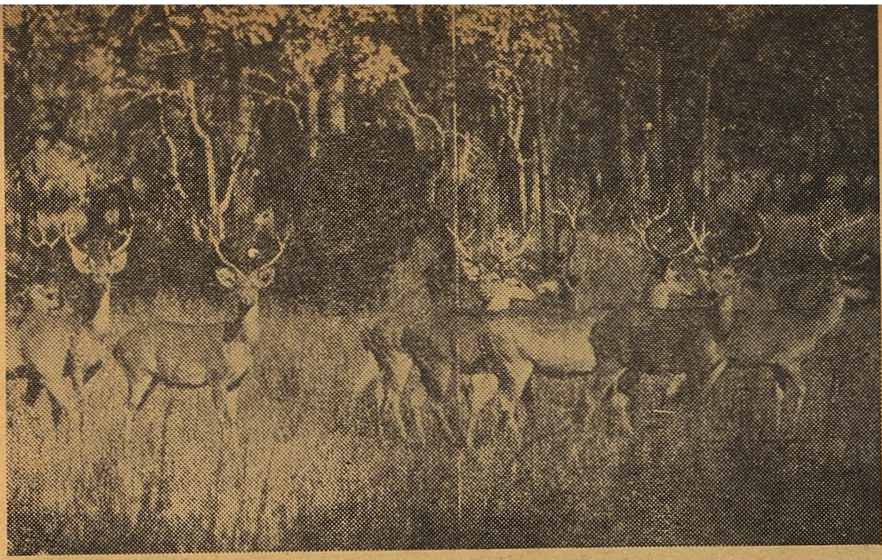


6. If a snake is seen the best advice is to let it go its own way.
7. Not all snake-bites are fatal.

The reason " country remedies " do often work wonders in snake-bite cases is that most snake bite victims will survive their bites with or without treatment anyway.

The only effective remedy for snake-bite is antivenom serum : It is made in India by Haffkine Institute, Parel, Bombay-12 and is effective against the four deadly snakes.

Antivenom serum can be stored at room temperature and it should be stocked by every rural dispensary and doctor ; check with your doctor and make sure he has a stock or keep some yourself—the life, you save may be your own.



BLACK BUCK INDIA'S BEAUTIFUL ANTELOPE

By

A. J. T. JOHNSINGH,

Asst. Prof. of Zoology,

Ayya Nadar Janaki Ammal College, Sivakasi.

The black buck (*Antilope Cervicapra*) is the sole representative of the Antilope and is typically Indian in distribution. When the species roamed in herds about the open woodlands and cultivated tracts of India, it formed the staple food of the extinct Indian cheetah. These huge herds, which formed an easy target of the hunters, are now gone. The remaining black bucks are only a few in number and they cling to the last vestiges of their former ranges in small scattered groups. Some authorities recognize four subspecies of the black buck. Of this *Antilope Cervicapa centralis* occurs in Central India, *Antilope Cervicapra rajputamee* in Rajasthan and Punjab, *Antilope Cervicapra rupricapra* in Uttar Pradesh eastward, and *Antilope Cervicapra* in Southern India. The State of Assam, West Bengal and Kerala are said to have no black buck. In Orissa, the species is confined to about 190 sq. km of sand dunes on a spit of land that separates Chilka lake from the sea. The species is on the verge of extinction in Uttar Pradesh and almost extinct in Bihar. In Mysore, Maharashtra, Punjab and Gujarat the black buck population lives in scattered groups. In Madhya Pradesh, a few black bucks are found in Kanha Park and Shivapuri Park. A stronghold of the black buck in India appears to be Western Rajasthan where it is found sporadically in the isolated semi-desert parts protected in the past by maharajas or local villagers.

It is reported that in Tamil Nadu a viable population occurs in the Point Calimere sanctuary but this is rapidly being poached out. A few have been introduced in the Guindy Deer Park. The author has heard of the presence of the black buck around the Lower Bhavani dam in Coimbatore district and has seen a few in the Vallandu Hills, Tirunelveli District.

The black bucks are medium-sized slender antelopes. The bucks stand 73 cm to 83 cm high at the shoulder and their total length is 120 cm to 145 cm. The weight of the bucks varies between 30 kg and 40 kg while that of the does between 30 kg and 38 kg.

In adult bucks, the back, sides, and the neck part of the face and outside of the legs are black. The chest, the abdomen, the rump and the inside of the legs and tail are white. A white ring surrounds each eye and there are patches of white on the nose and chin. The nape is rusty. The does and fawns are light brown in those parts of the body where adult bucks are black, and white in the remaining portions. Adult bucks seem to undergo a conspicuous change of pleage colour during a molt. Horns are marked with rings and make three to four complete spirals in adults. The record horn length is 72 cm. In the yearling buck horns are without spiral. In the second year a large open spiral is developed. It is believed that the full number of spiral twifts is attained with the dark coat about the end of the third year. Horned females are rarely met with.

The black buck ruts throughout the year with two active breeding periods. The gestation lasts nearly six months and the active breeding periods falls in March-April and August-October months. Owing to this, the birth of the fawns coincides with the North East and the South West monsoons respectively. Birth during the rains enables the fawn to get maximum cover and food. Usually only one fawn is born at a time. At times twins are born and the author has seen a doe with two fawns in the Vallandu Hills.

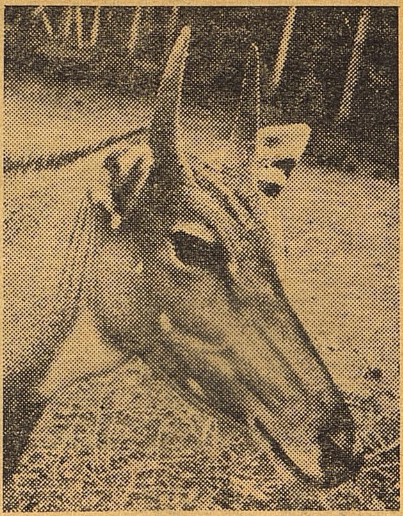
In areas where they are not disturbed, they are diurnal and are capable of remaining in open areas probably tolerating direct sunlight much more readily than other wild ungulates. But in disturbed areas like Vallandu Hills, they come out of the cover mainly after dark and retreat soon after the dawn. Black bucks are mostly grazers. These animals can withstand long periods without water and may have a mechanism to derive metabolic water, similar to that found in herbivores which inhabit deserts.

The black bucks appear to have a good sense of smell and sight. Vocalization is poorly developed. When a black buck suspects danger, it stands erect with head held vertically, and its forelegs may be stamping on the ground. In flight, they have a peculiar means of progression called stotting or spronking. While spronking the animal bounds along stiff legged hitting the ground with all four feet in unison.

One of the visual and olfactory singns used by the bucks to mark their territory is the deposit of their faces at a specific location. A buck, defecating at a dung pile, sniffs the pile and paws once or twice with a fore leg. Then it stands with his forequarters stiff and erect, the head raised and the horns lying almost parallel to the neck. The hind legs are stretched far back. He urinates in this manner, then squats low and defecates. This type of behaviour is not prominently exhibited by the bucks while defecating at other places. Another way to mark the territory is by scent. For this,

the prominent preorbital glands are used to mark grasses and bushes with scent.

The leadership of a herd is usually vested in an old and vigilant female. Dominance among bucks is most commonly asserted with the head-up display. During this behavioural display the buck raises his muzzle so high that the horns lie almost alongside the neck. The ears are folded back, lowered and held somewhat laterally exposing the white surface inside. The stubby tail is raised and curved up over the back making the white patch on the rump conspicuous. With the preorbital glands everted, the buck approaches his opponent at a prancing walk. Sometimes the head may be bobbled up and down, flashing the white chin. Occasionally, the buck bounds forward in a stiff legged gallpo, uttering a series of harsh grunts and jerking up his head with each sound. The thretened buck usually turns aside. A direct threat consists of lowering the head until the muzzle almost touches the ground and tip of the



The Nilgai variety

horns is pointed at the opponent. The posture may be intimated by a rapid downward jerk of the head, a gesture usually sufficient to cause the other animal to retreat.

During courtship the buck sniffs the anal area or the fresh urine of a doe. With curled lip, preorbital glands everted and muzzle raised in a typical head-up display, the buck prances with short steps after the doe. Harsh grunts may be emitted while chasing the doe. The buck shows his intention to mount by placing his chin on her rump, a gesture which causes her to stand still if fully receptive or to walk or trot ahead if not. A few days before parturition the doe withdraws from the breeding herd and has her young in a sceluded spot. The doe, after giving birth to the fawn, may spend nearly a week in the vicinity of the young often visiting to suckle. During this period the young fawn spends much of the day lying quietly in a patch of grass or thickets. It joins the herd with the mother after a week or so.

The black bucks are one of the fastest running mammals of the world. Their speed could have saved them in the past from the cheetah, the hounds, the kacjal and the men on horse back. But now, against the modern man, with his jeeps and fire arms, the black bucks have little chance of survival.

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LIC ANNOUOCES REDTCTION IN PREMIUM RATE FOR ACCIDENT BENEFIT AND GROUP SCHEMES

On the occasion of its 20th anniversary on 1—9—1976, the Life Insurance Corporation announced (1) a reduction in the premium rate for accident benefit and extended disability benefit facility from the existing rate of Rs. 1.50 per rupees one thousand sum assured to Re. 1 per rupees one thousand sum assured for individual assurances, and (2) a reduction in premiums for group gratuity schemes making them cheaper than before enabling more and more employers to subscribe to such schemes for the benefit of their employees.

These announcements were made on behalf of the Life Insurance Coporation by the Union Finance Minister, Shri C. Subramaniam, who was presiding over a function here, today, on the occasion of the 20th anniversary celebrations of LIC.

A spokesman for LIC gave details of the latest concessions and new schemes to newsmen.

Reduction in accident benefiand extended disability benefit pret mium rate

The additional premium charged in life policies to cover the risk of death by accident (where double the sum assured is payable on death by accident) and for obtaining extended disability benefits (where on the occurrance of specified disability by accident accident, certain benefits are payable and further premiums cease) have been reduced by 33 1/3 per cent with immediate effect. This benefit is now available on extra payment of Re. 1 per rupees one thousand sum assured as against the previous rate of Rs. 1.50. The present reduction follows in quick succession to the reduction announced during the last year from Rs. 2 to Rs. 1.50 for this benefit.

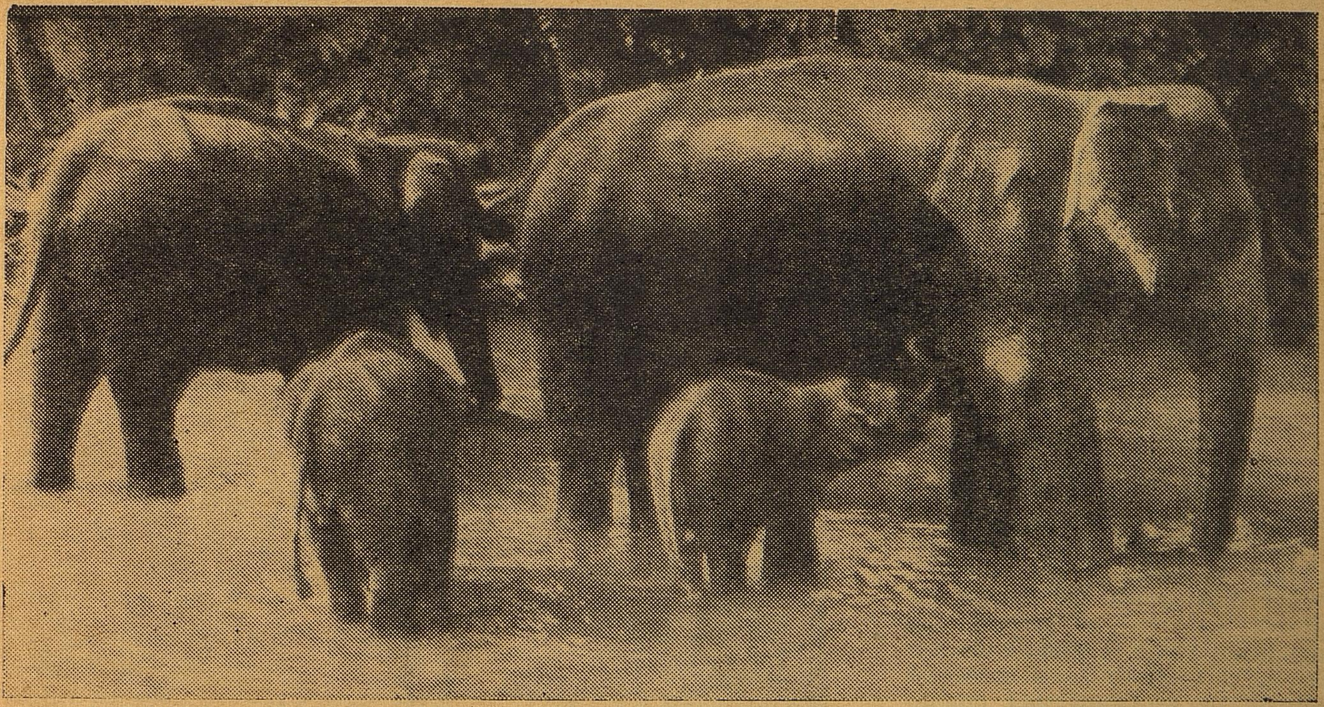
The spokesman clarified that the benefit of this reduction would be available not only to new policies but also to all existing policies, whereunder the accident benefit and extended disability benefit cover has been taken out by policy holders. From existing policy holders the premiums will be collected at the existing rates, but such excess from the date of revision will be refuneed to the claimant at the time the policy becomes a claim or is surrendered.

The spokesman added that with the latest concessions the Corporation's policies offered accident benefit at the most economical rate.

2. Reduction in premia of group gratuity schemes :

LIC's spokesman further stated that with effect from 1st September, 1976, the Corporation has reduced the premium rates under gratuity funding plan. This reduction would make these group plans cheaper by 15% to 20% resulting in corresponding reduction in the cost of employers who will be taking out such schemeI for the benefit of their employees.

The spokesman explained that the LIC's group gratuity scheme was more advantageous than private funding scheme, because of the inbuilt increased quantum of death gratuity. The Spokesman expressed the hope that with the announced cheaper rates, group schemes will become more popular.



WILD LIFE WILL BRING MORE TOURISTS

By
THIRU. T. JEYADEV, I.F.S.,
Chief Conservator of forests.

Tourist development posters beckon people to visit "Tranquil Tamil Nadu". Apart from the poise of the Tamil people and the tranquility of Tamil Nadu in many spheres, the most tarnquil of the places for the tourists are the fascinating wildlife areas in Tamil Nadu. Each region of India has its own peculiarity and the wildlife areas in Tamil Nadu have their own characteristics.

In order to develop tourism of any kind, apart from wide publicity of the places to which the tourists are requested to visit, the places themselves should have intrinsic worthiness, aesthetically, culturally, geographically, ecologically, florally or faunistically. Once a bunch of tourists are attracted to a particular place and realise the intrinsic value of the place, a chain reaction sets in, but further tourism on a large scale can be sustained only if adequate visitor facilities are made available.

The Tamil Nadu Forest Department had in a small way made available tourist facilities to view the wide and varied forms of wildlife within Tamil Nadu. For the tourist who is interested in bird life, there is a Water Birds Sanctuary at Vedanthangal, 80 km. away from Madras air-port. There is accommodation in Vedanthangal House — a Forest Rest House built within bowshot of the sanctuary, where the tourist after viewing birds nesting in the trees scattered over the expense of the lake can reside in the rest house and have the opportunity of seeing the flight movement of birds both in the early hours of the morning and at dusk.

For those who are interested in sylvan surroundings and viewing fauna associated with deciduous forests of South India. Mudumalai Sanctuary in the Nilgiris District offers elephant rides, jeep rides and camping facilities. There are accommodation facilities which include fourForest Rest Houses,2 log houses, tents and dormitory facilities.

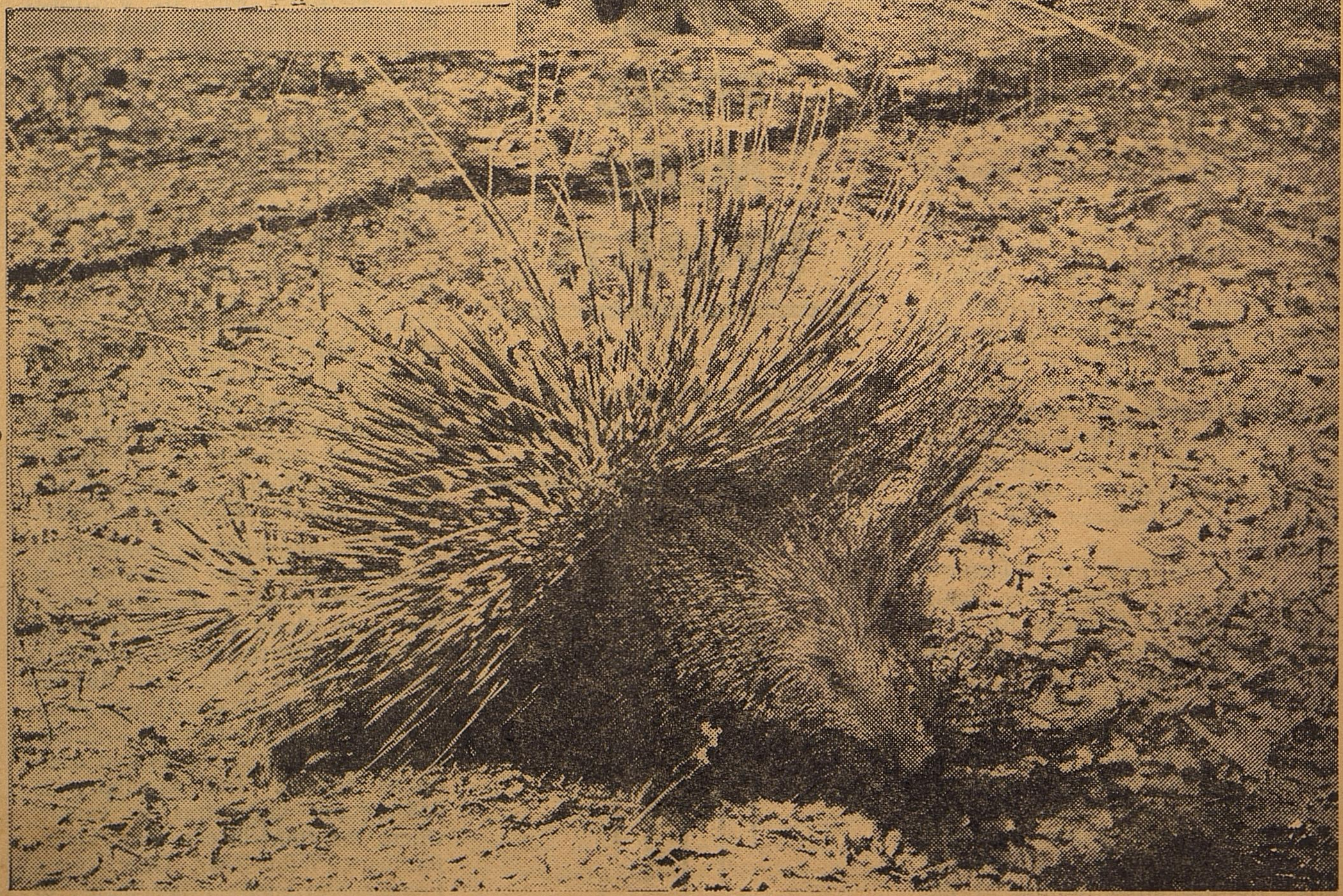
Just in the heart of Madras City, there is a unique deer park, which is proposed to be elevated as a National Park within the provisions of Wildlife (Protection) Act, 1972, Black Buck and Spotted Deer are its special features and the added attraction to the tourist are the Children's Corner and the Madras Snake Park located therein.

There are other sanctuaries like Mundanthurai Tiger Sanctuary in Tirunelveli District. Point Calimere Sanctuary along the east coast in Thanjavur District noted for Black Buck, Spotted Deer and Swamp Birds. The recently constituted Anamalai Wildlife Sanctuary in Coimbatore district covers sholas and deciduous forests. The sanctuary is 958 square kilometres in extent, where the tourists can view Gaur, Panthers, Wild Boar, Deer, Nigai Langur and many other forms of wildlife.

The latest addition to the list of sanctuaries in Tamil Nadu is the Kalakkadu Wild life Sanctuary, 55 km by road from Tirunelveli Railway Station. The special feature of this sanctuary is that it has been constituted for the specific purpose to afford protection to the lion-tailed macaque (*Macaca silenus*), a species of monkey on the verge of extinction.

UNIQUE FEATURES IN TAMIL NADU

Wildlife Tourism can become a major source of revenue to Tamil Nadu, apart from the foreign exchange it earns for the country. While development of tourism improves economy in general, the significant aspect of wildlife tourism is that it helps to boost economic activity in backward and remote areas where the economic condition of the people borders the poverty line. Many of the wildlife sanctuaries had brought tourists from far flung regions to Tamil Nadu and this had helped to afford facilitise



to the people inhabiting the areas around the sanctuaries. In Tamil Nadu, wildlife tourism is in the developing stage and efforts to attract the tourists to the peculiar attractiveness of the fauna and flora of Tamil Nadu should be strengthened. The visitor facilities will have to be increased with concerted efforts of the tourism and the wildlife wings of the State. The growing awareness of the people to the need for wildlife protection and the perils to which the ecosystems are exposed should be harnessed by making more facilities available for their visit to wildlife areas so that the problems of endangered species are appreciated by many, while at the same time real recreation is made possible to them in areas of scenic beautiy and calm environment.

The Point Calimere Wildlife Sanctuary

The Point Calimere Wild Life Sanctuary in Thanjavur District is 7 miles south of Vedaranyam Village and can be reached by Train from Madras *via* Mayuram and Thiruthuraipoondi. Direct buses are also available from Mayuram and Thanjavur.

This Wild Life Sanctuary is unique in having a large concentration of Black Buck or Indian Antelope which is fast disappearing in many other parts of the country. Other mammals commonly found are Jackal, Rabbits, Wild Pigs, Wild Ponies and Bonnet Monkeys. Spotted Deer and Peacock have also been introduced in this Sanctuary area recently.

LARGE VARIETY OF SANCTUARIES

The Swamps of Point Calimere is of special attraction to ornithologists. Flamingoes visit these swamps in thousands during winter months and the vast congregations of these birds with white and pink plumes offer an unforgettable and spectacular display. A large number of migrants and birds stay in these swamps and its environs and this place serves as a haven to a large variety of birds.

List of Migrants available in Swamps of Point Calimere

1. Garganey Teals
2. Shovellers
3. Whistling Teals
4. Pinttails
5. Curlews
6. Avocets
7. Oyster-catchers
8. Blackheaded Gulls
9. Great Black-backed Gulls
10. Whiskered Terns
11. Little Terns
12. Caspian Terns
13. Godwits
14. Golden Plovers
15. Great Stone Plover
16. Sand-pipers
17. Little Stints
18. Red Hanks
19. Green Shanks
20. Ringed Plovers
21. Reef Herons
22. Whimbrels
23. Red-necked Phalaropes.

On the way to Sanctuary about 5 miles away from Sanctuary there is a place called " Ramar Patham " of religious importance. It is maintained by the Archaeology Department.

The main tourist season is from November to January. There is one well furnished Forest Rest House at Point Calimere with two suite of rooms, with a cook and with conveniences for arranging both Western and Indian type of food.

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WILD LIFE SANCTUARIES OF TAMIL NADU

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Reproduced from original drawn with information furnished by the State Wild Life Officer, Madras Forest Department, Madras.

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THE MUDUMALAI WILD LIFE SANCTUARY

The Mudumalai Wild Life Sanctuary will appeal as much to people interested in flora as to those who care for wild animals. The vegetation within the sanctuary varies from deciduous to evergreen type. In the drier localities of the sanctuary species of Acacia and Alibizzia, with a low undergrowth of lantana and other thorny bushes and short grasses are seen with a sprinkling of sandalwood. In the other areas of Mudumalai one comes across valuable timber species such as rosewood, teak, venteak, vengai etc. Screwpipe can be found along the streams and streamlets. Bamboo brakes are a special feature of the sanctuary and they are found in the moist regions.

Elephant camp

The sanctuary also has an Elephant camp where elephants are tamed. Elephants are available for rides through the Sanctuary. Four adults can ride on one elephant for Rs. 10/- which is exclusive of visting charges. The rides are available at 6-00 a.m., 8-00 a.m. and 4.-30p.m. Advance booking is required for elephant ride. The Twin baby elephants born at this camp entertain the visitors with their antics.

The Moyar is the main river of the sanctuary and provides perennial water satisfying the needs of all animals, big and small, for drinking, wallowing and bathing. In places it is a deep, fast flowing river with an impressive series of cascades at the waterfall in Theppakkadu which no one should miss.

A view point near Kargudi rest house, gives one a panoramic view of the Country around.

How to reach the Sanctuary

From the Coimbatore airport Mudumalai is accessible by good road, the distance being 160 km. The nearest railheads are Ootacamund and Mysore. Visitors can reach Kargudi by bus from Ootacamund and also from Mysore. It is 64 km. from Ootacamund and 95 km. from Mysore. Ootacamund-Mysore main road runs through the sanctuary. There are bus stops at Abhayaranyam rest house and at the Office of the Wild Life range Officer, Kargudi. Tourist buses are available during the season at Ootacamund in the months of April and May for visiting the sanctuary. Regular buses also ply from Ootacamund to Mysore, to Moyar, to Gundalpet etc., through this sanctuary.

Best Time to Visit

It is ideal to visit the sanctuary between February and June when the tall elephant grass dries up, increasing visibility considerably. The most suitable time to go round the sanctuary is between 6 and 9 in the morning and between 4 and 6 in the evening.

Accommodation and other facilities

There are four well equipped rest houses in the sanctuary *viz.*, Abhayaranyam, Kargudi, Sylvan Lodge and Masinagudi rest houses. In addition to these, two long huts one with 2 suites at Teppakkadu near Sylvan Lodge and another with 4 suites at Masinagudi are also available. The reservation for Sylvan Lodge is done by the State Wild Life Warden, Madras-6. Locally, reservation will be done subject to the availability, by the Wild Life Range Officer, Kargudi. The reservation for other rest houses and elephant rides is done at the District Forest Office, Nilgiris North Division, Ootacamund. Vans and jeeps are available to go round the sanctuary on payment.

The rates are as follows :

Abhayaranyam (two suites)
Kargudi (two suites) and
Masinagudi (three suites)

Single person .. Rs. 5.00

Every additional person Rs. 2.50

Sylvan Lodge (4 suites)

1. For a single person Rs. 7.50
2. For two persons Rs. 11.25
3. For each child .. Rs. 4.00
4. For each person over 12 years of age other than son or daughter Rs. 5.00

Tent (near Sylvan Lodge) :
Re 1/- per person per day.

Visiting charges :—Re 1/- per head for adult and Re. 0.50 per head for children above three years and below twelve years.

Use of Private Cars and Vans inside The Sanctuary

Rs. 5/- per car per day and Rs. 7.50/- per van will be charged for use of private vehicles inside the sanctuary. Vehicles are permitted inside the sanctuary only at the RISK of the owner.

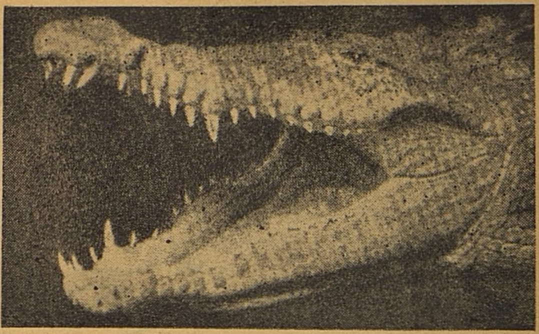
Camera Charge : A sum of Rs. 2/- is charged for an ordinary still camera per day and Rs. 10/- for a movie camera per day.

Forest Departmental Vehicles & Hire Charges

Jeep	Re. 0.25 paise person
Mini bus (10 seats)	per km. subject to a minimum of Rs. 1.50
Mini bus (20 seats)	per km.
Van (20 seats)	

Guide Services : For all assistance and necessary arrangements the Wild Life Range Officer, Kargudi, may be contacted (Phone : Gudalur 26). At Ootacamund the District Forest Officer, Nilgiris North Division may be contacted for information and guidance (Phone 2335). Payment has to be made in advance, to confirm reservation in the District Forest Office.

Save the Crocodiles



—*By* **LALA A. K. SINGH**

Gharial Research Station,
Tikerpada (Orissa).

About two hundred million years ago, the reptiles began to invade all the three media—land, water and the air. This was possible because of their ecological advantage over their closest competitors, the amphibians. The reptiles were no more tied to water to lay their eggs, because they had developed a shell around the egg and also during development the embryo became surrounded by a series of membranes called embryonic membranes which afforded protection, even from dessication.

During this age of reptilian radiation (Mesozoic era), there appeared the most gigantic forms of the animal history — the dinosaurs, the 'terrible lizard,' though in no way they had any direct phylogenetic relationship *i.e.*, any direct evolutionary follow up, with the lizards. Contemporary to the dinosaurs were two groups of reptiles which had sway over the aquatic environment. These reptiles were the phytosaurs and the crocodilians who share many common features. They exhibit a convergent evolution towards excellence in secondary aquatic life. While the crocodilians still have three surviving families, the dinosaurs and the phytosaurs have become extinct. Today the corcodilians form one of the four surviving reptilian groups (Orders : Chelonia—Turtle and tortoises, Rhynchocephalia — the tuatara, Squamata—snakes and lizards and the Crocodilia).

The earliest known crocodilian is Proterochampsa barrionuevoi. This was discovered in Western Argentina in fossil beds dating to the middle Triassic (about two hundred million years ago). Other early crocodilians were Sphenosuchus from South Africa and Protosuchus from Arizona, etc. Of them the best known is **Protosuchus.** Two hundred million years ago the most primitive crocodilian emerged from some Thecodontia—group including forms like phytosaurs. During the course of its evolution it gave off many side branches, which are now extinct. The forms existing now differ considerably in their morphology, anatomy and physiology from their earliest representatives.

Living Crocodilians

The Crocodilian order constitutes three living families Alligatoridae, Crocodilidae and Gavialidae. The Alligatoridae includes alligators and caimans. The characteristic feature of the family is the broad short snout and the pit on the upper jaw providing space to fit the fourth tooth of the lower jaw. Alligators are found in the Southern United States (A. Mississipiensis) and China (A. Sinensis). The caimans, which differ from alligators in having overlapping ventral scutes, are found in Central and Southern United States. The American alligator grows to four metres in length. The black caiman (Melanosuchus niger) grows to five metres and is the longest caiman. The broad nosed caiman (Caiman latirostris) of Eastern Brazil rivers grows only to two metres in length.

The Crododilidae includes the true crocodiles (Crocodylus sp.) the dwarf crocodile (Osteolaimus sp.) and the false gharial (Tomistoma schlegeli). They are found all over the world excepting Europe where the climate is too cold for them. There are fourteen species of crocodiles. The false gharial is a fish-eating crocodile with a long snout having four rows of teeth, two in each jaw. They occur in Malaysia, so are often called Malayan gharial. Because it has a superficial resemblance to the Indian gharial in having a long snout, it is called false gharial. The false gharial grows to a length of five metres. It is said to actively pursue its prey in contrast to the Indian gharial. The mandibular symphysis (the line of junction between right and left halves of the lower jaw) is very long, extending back to the level of fourteenth or fifteenth teeth. In the gharial it does not extend beyond the eighth tooth.

The Indian gharial Gavialis gangeticus is the sole surviving member of its family Gavialidae. Its natural habitat is the Himalayan-fed rivers. It is a natural species occurring in Nepal and in the North Indian rivers. River Mahanadi of Orissa is the only river outside this region to have gharial and it once harboured one of the best gharial populations.

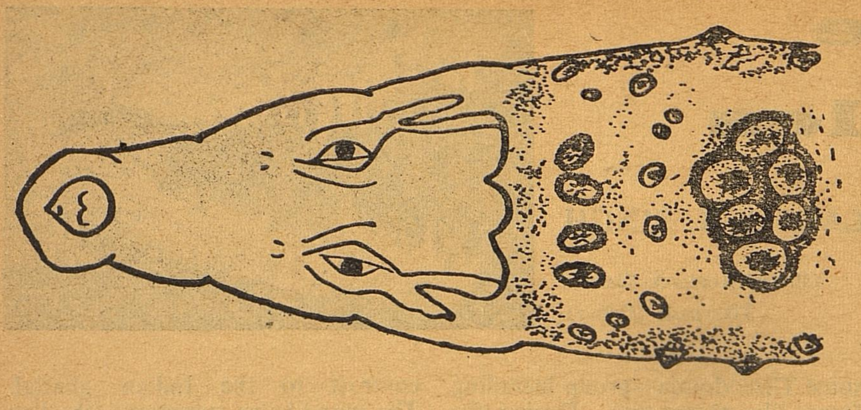
Indian Crocodiles

In India, there are two types of true crocodiles and gharial. Orissa is the only State today to have all these three species. Of the two true crocodiles, one is estuarine (estuarine or salt water crocodile) and the other is fresh water (Mugger or marsh crocodile).

The estuarine crocodile (Crocodylus porosus Schnieder) is widely distributed. In India, only two populations have been left, one is the Bhitarkanika Island and the adjacent mangrove areas of Orissa and the other is the Sunderbans of West Bengal. It grows to a length of seven metres.

The Mugger (Crocodylus palustris Lesson) is widely distributed in India. It grows to a length of five metres. In contrast to porosus, they have four prominent post-occipital scutes.

The genus Gavialis for the Indian gharial Gavialis gangeticus (Gmelin) is the Latinized version of a misspelt Gharial. The name takes its origin from the presence of an inverted pitcher-like structure



Head of Mugger

round the nostril at the tip of the long snout in males. In most of the north and east-Indian States, a pitcher is called a ghara or ghari. The ghari is believed to develop after the male attains a length of about 2.5 metres. During breeding season the male gharial is very noisy. The sound produced is a combined effect of vocal and nasal sounds. Probably the ghari serves as a resonating organ for the nasal sound waves. Gharial reaches a length of eight metres. In India, the Satkoshia Gorge of River Mahanadi (Orissa) is one of the best gharial habitats. The Satkoshia Gorge with its number of deep pools of flowing water, good sand banks for basking and nesting and a good fish population is an ideal gharial habitat.

The gharials are harmless to human beings. People living around the Satkoshia Gorge have a balanced relationship with the gharial, neither interfering in the other's activities.

Characters

Crocodialians are amphibious —they live in water but come out to bask. As an aid to their aquatic life, crocodilian eyes are equippped with a third eye lid, the nictitating membrane which moves across the eye to protect them during submergence without interfering vision. The hind limbs are webbed. Crocodilians, like mammals have a four-chambered heart, found in no other reptile.

Crocodilians lay their eggs either under the sand or in a specially prepared nest of sticks and dead leaves. In general, those nesting during the dry season nest in sand banks (gharial and mugger), whereas monsoon nesters build the nest as a mound on the ground, because the banks are flooded during that time of the year (porosus).

Crocodilians reach maturity at an age of six to ten years. Usually there is no obvious external sexual dimorphism. When they are about 75 cm long, the genital organ can be felt in males by probing into the vent. It is interesting to note that the gharial is the only crocodilian to have a marked distinction between the sexes — the presence of the ghari in the male. A newly matured female would start laying eggs at the rate of about 20 per annum. Only one clutch of eggs is laid once a year. As the female grows older and larger, her egg laying capacity increases, in some species it is hundred eggs. The average size of an egg is 5 cm to 8 cm long. The incubation period is two to two and a half months. When born, the hatchlings are about 30 cm in legnth. There is a high mortality percentage during the first few months of life. Growth rate depends on temperature and food supply. The life span of crocodilians may be over a century. Once they become large, over a metre in length they have no successful enemies except man and other crocodilians.

The Present Position in India

Until late nineteen hundred and fifties crocodiles were in large numbers. After that the entire corcodilian order has faced critical depletion both in India and outside. Survival of some species like the Cuban crocodile (Crocodylus rhombifer), Indian gharial and the false gharial, etc., is in jeopardy.

The main cause for the depletion is extensive hunting for the extremely valuable hide of the crocodiles. Hunting for their skin has also been the main cause for the destruction of Indian crocodilian populations. Gharial populations in India have been greatly affected due to habitat alienation through construction of dams and concrete embankments destroying nesting grounds.

Introduction of new fishing methods by using nylon gill nets is another serious reason for the loss of crocodilian populations in India. These nylon nets, which are set in the evening and taken out the next morning, prove fatal to the crocodiles and the gharials as they quickly drown due to struggling. If they escape drowning in the water, they are clubbed to death to save the net. Also, deliberate killing of mugger crocodiles in India with the misconception that it would promote fishery has greatly reduced their number. On the contrary, crocodiles help to increase fish population.

Indian concern

Becoming increasingly concerned about the dwindling crocodilian population in the country, the Government of India banned their killing and export in 1958. The formulation of the Wildlife Protection Act (1972), now adopted by most Indian States has strengthened their security. It is illegal to possess any live, captive Indian crocodilian or any part thereof in any form, without authority from the Chief Wildlife Warden of the State. Penalty (first offence) is mandatory imprisonment for not less than six months together with a fine which shall not be less than Rs. 500. Further, an offence relating to hunting in a sanctuary or a national park shall attract minimum penalties of double the above.

During a three month mission to India, May to July, 1974, Dr. H.P. Bustard of FAO investigated the status of all three Indian crocodilians and in his report referred to it. He reported that the gharials are on the verge of extinction and could only be saved by active management techniques operated in association with specially created sanctuaries where poaching could be controlled. Since gharials occur only in India and Nepal, Government of India showed immediate concern. He referred to the mugger as a depleting species, not yet endangered and still present in most States, but disappearing faster than it can reproduce itself. He recommended

the development of pilot projects in West Bengal and/or Orissa. In April, 1974 the Orissa Government (Forest Department) had decided to protect the gharials by appointing two local villagers of the Satkoshia Gorge as guards. Following the experts' recommendation, an integrated scheme on crocodilians and sea turtles was started in Orissa in April, 1975 and now the number of gharial guards has increased to ten.

Work in Orissa

Being master predators, large crocodilians are quite safe except from man. At the stage crocodilians have many enemies such as monitor lizards, jackals and even tribals who relish it as a food (the tribals are most organised and effective). All eggs in a nest are not fertile. Only a part of the fertile eggs can be expected to hatch. The young hatchlings too have many enemies — fish, birds, nets, more particularly the nylon set nets. During the first year of development a large number of hatchlings are lost. Sometimes the survival percentage is nil.

For the gharials the Orissa Government has a gharial rearing project at Tikerpada, a village four and half km. downstream the beginning of the Satkoshia Gorge of the River Mahanadi. An area of about 950 sq. km., having the Satkoshia Gorge as the sanctom sanctorum, has been declared a sanctuary for the gharials. The estuarine crocodiles are similarly reared at Dangmal in the Bhitarkanika mangrove surrounding. This area has also been declared a sanctuary. The station for the mugger is ready to be started at Similipal Tiger Reserve of Mayurbhanj District. Another sub-scheme at the State Biological Park at Nandankanan intends to captive breed and battery farm all the three species. A large 2.7 million litre capacity pool has been constructured for the gharials.

Economic potential

Crocodiles reared for commercial purposes are slaughtered at the age of three years. However, the case with gharial may be quite different. The demand for the skin was the game of extensive illegal hunting. The skin is used for making shoes, bags and belts, etc. The tribals eat the meat. The meat is believed to be a cure for asthma.

Though we think that crocodiles are voracious fish-eaters and are detrimental to fishery, the truth is somewhat different. Firstly, crocodiles do not eat much food. Secondly, they live mostly on coarse fish which are predators to other fish, fish fry and fingerlings. Also, crocodiles are known to feed on fish-eating birds. It is interesting to note that others are now abundant in Corbett National Park following a marked reduction in mugger-gharial numbers. Others are very destructive to fishery because they kill three times the number they consume and eat much more than crocodiles do. Small crocodiles (not gharials) eat many invertebrate predators of fish fry and fingerlings. Examples of such invertebrates are the giant water bugs (Belostomidae), nymphal dragon flies and voracious water beetles (Dytiscidae), etc.

Future of the crocodilians

In India several States are now active in conserving their last crocodilian populations. Presently, Orissa and Uttar Pradesh.

Among the Indian crocodilians the status of the gharial is most threatened. Let us preserve these gharials of elegant golden look ! *

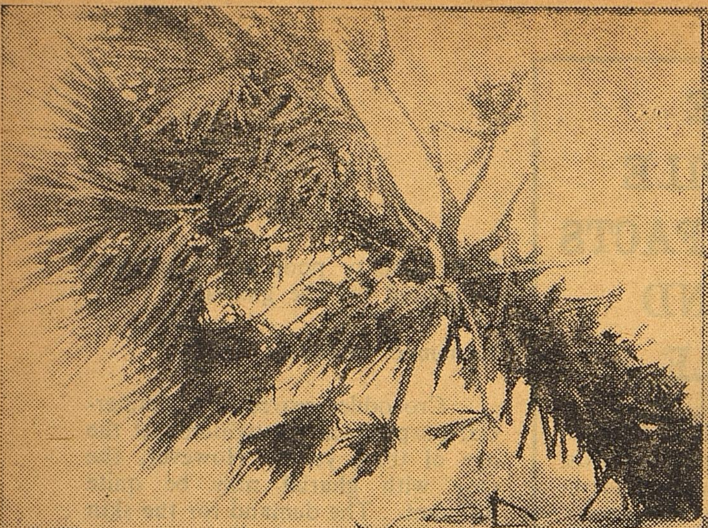
THE CROCODILE TEARS FACTS BEHIND FABLE

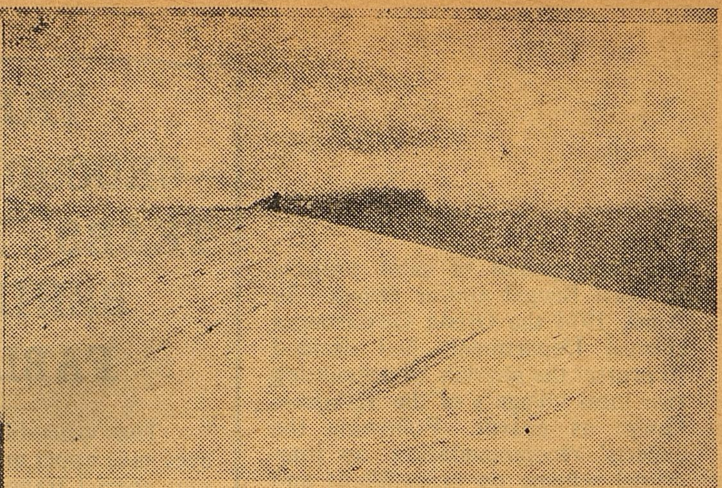
The crocodile's turreted eyes have upper and lower lids, plus special transparent memranes for use, (like skin divers' goggles) under water. The eyes, golden and rather beautiful, are also equipped with lachrymal glands whose natural function has inspired what is probably the silliest of civilized man's animal legends—*viz.*, crocodile tears.

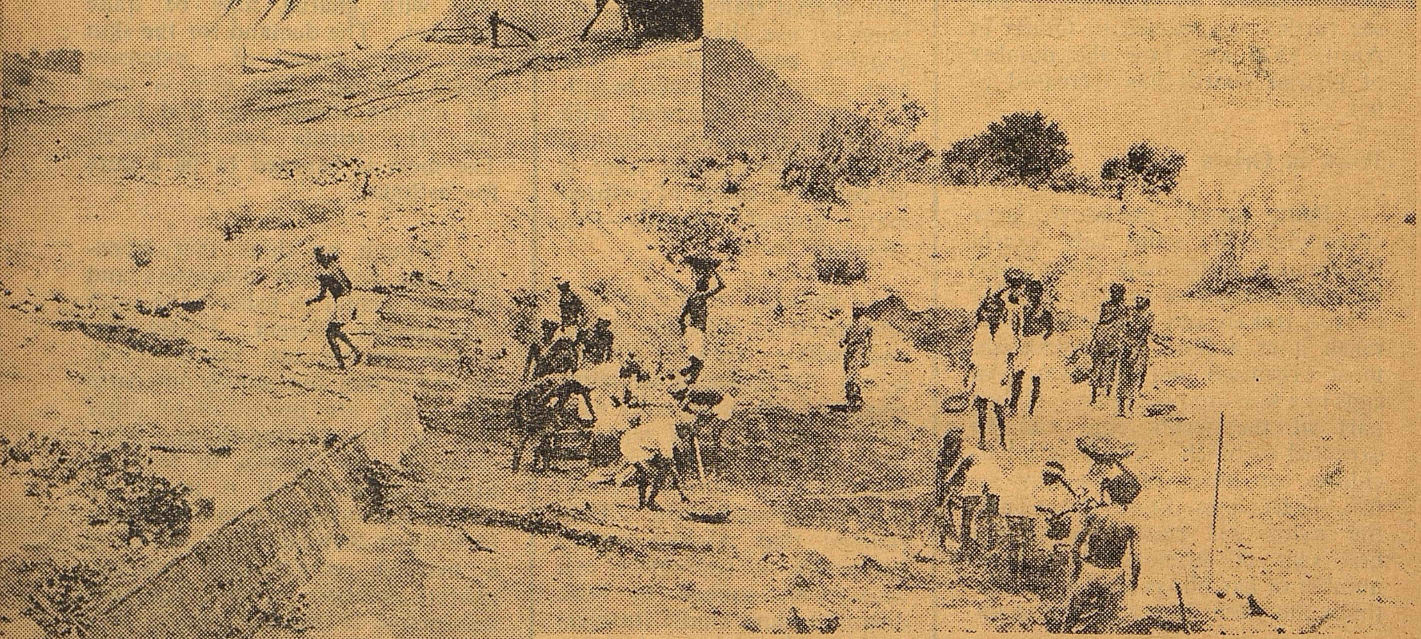
Classical, medieval and post-medieval scholars, sages, and poets — even Sir Francis Bacon, the father of inductive reasoning who constantly deplored fallacies — all repeated the same bizarre tale which is embalmed in current speech as an often used cliche. They claimed that African waters harboured a supremely evil beast who sobbed in false distress to lure kindly travelers to his aid ; then, shedding hypocritical tears, crammed them down his gullet. This fantastic animal, accused of conduct only humans could conceive of, was usually referred to as "the cruel craftie crocodile." His unprincipled beahaviour was described, of course, as weeping "crocodile tears."

The facts of the matter are a bit less melodramatic. Because the blazing tropical sun causes heavy evaporation, even from his cornified skin and scales, the crocodile's blood sometimes becomes excessively saline. Then, since his kidneys cannot excrete all of the excess salt, the rest is eliminated through his eye glands as large but utterly innocent drops of salty water.

—*Jean-Pierre Hallet* from his book "*Animal Kitabu.*"







TAMIL NADU FIGHTS SAND-STORM

* It was as though a desert was formed over night. It was only sand all around. The P.W.D. took up the work of clearing the channels and tanks.
* 40 bulldozers were deployed overnight

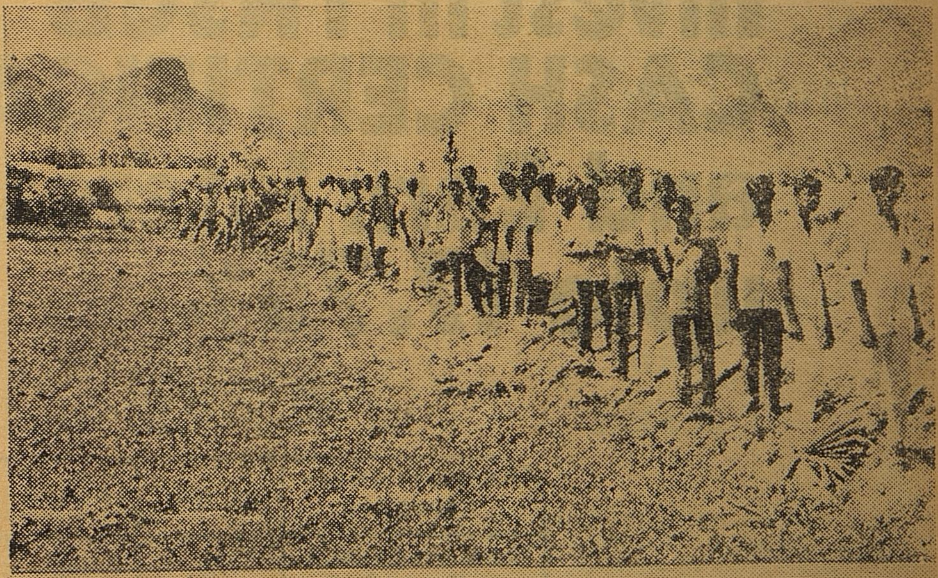
GREEN FIELDS RECOVERED FROM SUDDEN SAND-STORM

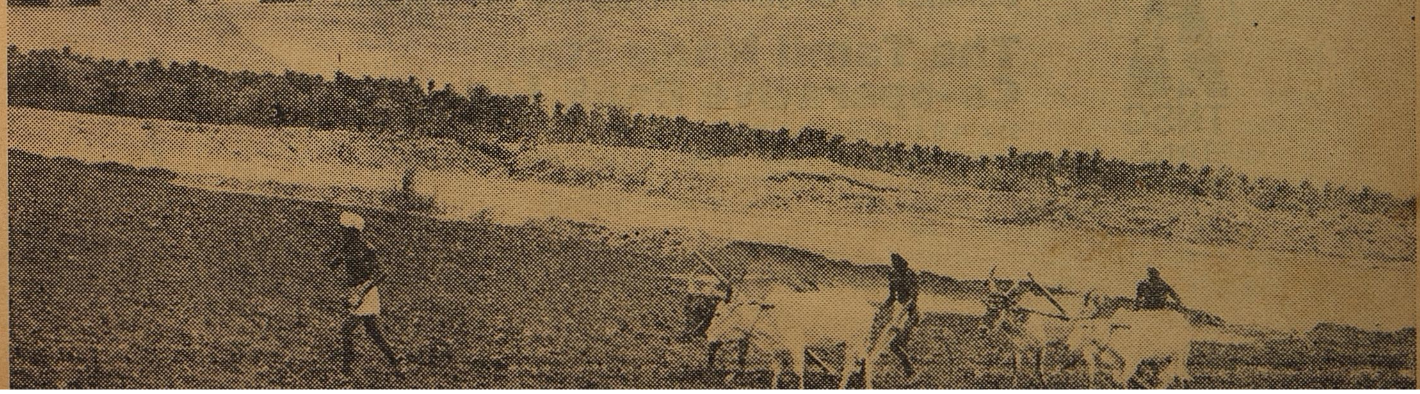
After suffering an unprecedented drought in the rabi season of 1975 and the kharif season in 1976 a new hazard overtook the ryots of Seithur Firka of Ramanathapuram District in August 1976 in the form of sand–storm which ravaged nearly 2,400 acres of arable land. The ravage was conspicuous in North Devadanam, South Devadanam, Muthusamipuram, Seithur, Mettupatti, Solaiseri and Soundararajapuram villages. 128 wells were silted up — several tanks and irrigation channels were also filled with sand.

Farmers were bewildered by this new menace. They could not even identify their own fields and wells, and cultivation seemed an impossibility.

The Government lost no time in tackling this problem. Thiru P. K. Dave, Adviser to the Governor visited the area immediately and sanctioned over Rs. 15 lakhs and more than half of this was by way of subsidy to the farmers.

Relief operations were started on a war footing by the Agriculture Department. 40 Bulldozers were moved from all over the State to clear the sand from the fields. Camps were set up at the spot itself. Farmers themselves were entrusted with the job of clearing the wells. The clearing operations were completed in a record time of 40 days.





Invest in TNSCB CASH CERTIFICATES and Earn Interest upto 17.75%

Amount initially deposited	Rs. 100/-	Rs. 250/-	Rs. 500/-	Rs. 1000/-
Amount payable at the end of	Rs.	Rs.	Rs.	Rs.
36 months	131.80	329.50	659.00	1318.00
48 months	144.60	361.50	723.00	1446.00
60 months	158.50	396.25	792.50	1585.00
61 months	168.00	420.00	840.00	1680.00
72 months	184.50	461.25	922.50	1845.00
84 months	204.30	510.75	1021.50	2043.00
96 months	226.30	565.75	1131.50	2263.00
108 months	250.60	626.50	1253.00	2506.00
120 months	277.50	693.75	1387.50	2775.00

Our schemes to help small investors are as under:

Maturity value at the end of the period	Rs. 25/-	Rs. 50/-	Rs. 100/-	Rs. 500/-	Rs. 1000/-
Amount initially payable for deposits maturing at:	Rs.	Rs.	Rs.	Rs.	Rs.
36 months	18.97	37.94	75.88	379.40	758.80
48 months	17.29	34.58	69.16	345.80	691.60
60 months	15.77	31.54	63.08	315.40	630.80

TNSC BANK

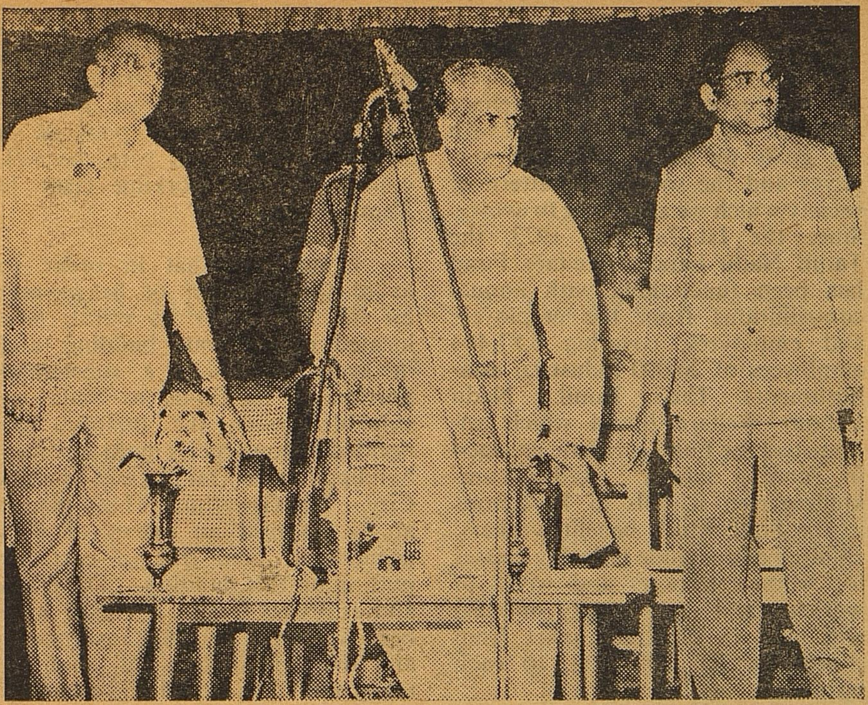
Contact us or our branches for full details:

The Tamil Nadu State Co-operative Bank Ltd.

379, N.S.C. Bose Road, Madras-600 001.

Grams: URBANK Phone: 20367 (3 lines) Telex: MS 7225

TNSC-124/75



LAND FOR LABOUR WELFARE BOARD BUILDING

GOVEREMENT GIVES SITE FREE

Speech of Thiru Mohanlal Sukhadia, Governor of Tamil Nadu at the laying of Foundation Stone for the Multistoreyed Building of the Tamil Nadu Labour Welfare Board at 5-00 *p.m. on* 12—10—1976.

The Prime Minister's 20 Point Economic Programme marks a milestone on the road towards a new socio-economic order for the nation. Its accent is on securing a fair deal for the vulnerable sections of society in general and agricultural and industrial labour in particular. Tamil Nadu is vigorously implementing the programme. **It is to the credit of Tamil Nadu that after the declaration of President's rulel strikes and lock-outs have come down. As against 103 strikes and lock-outs between February and July 1975, affecting 35,229 workmen, there were only 84 strikes and lock-outs covering 21,323 workmen between February and July, 1976.** Rules have been framed, making it necessary for industrial establishments to apply for permission for lay-offs, retrenchments and closures. The State Government have set up various bodies to help to promote a healthy climate for industrial relations.

Far-reaching decisions have been taken by the State Apex Body set up in March. It will go into the problems of industrial relations in the private sector. Pursuant to its decision, a compact standing Committee has been constituted to consider matters referred to it by the Apex Body and also to look into the implementation of the scheme of worker's participation in industry. This Committee also has taken several important decisions.

Bipartite Committee for Bonus Problem

The Standing Committee, consisting of employer's and employee's representatives has approved the industrial truce resolution, indicating broad guidelines. This is an important development which contribute substantially towards better understanding and harmony between the labour and the employers. A Bipartite Committee has also been formed to deal with the problems of bonus.

It will be acknowledged by all that labour and management have responded very favourably after the declaration of President's rule in the State. There is a noticeable decline in the loss of mandays. The total mandays lost between February and July 1975 was 6,34,344. The corresponding figures for February July 1976 is only 2,93,000. The climate of co-operation and harmony between the management and worker is now gaining stability.

Revision of laws on minimum wages for farm labour is one of the highlights of the Prime Minister's 20 Point Economic Programme. The State Government have raised the minimum wage to Rs. 5 for adult unskilled labour engaged in agriculture with effect from 2nd March, 1976 and higher levels for skilled categories and occupations. We have a network of Government agencies, located close to the farm lands, to ensure payment of minimum wage to agricultural labour. Proposals are under consideration for fixation of minimum wages in other vulnerable sectors.

For healthy industrial relations and rapid industrial development, participation of labour in industry is a 'must'. Point 15 in the 20 Point Programme which spotlights this idea, is being vigorously implemented in the State. The Government of India have formulated a scheme of workers' participation in industry under which shop councils will be set up at shop or departmental level and plant councils for the whole unit. Here in Tamil Nadu, the scheme has been successfully implemented in manufacturing and mining industries employing 500 or more workers. So far, out of 224 establishments in the State, 196 establishments have already implemented the scheme fully. 21 have done it partically. The progress of this scheme in this State and the neighbouring State of Andhra Pradesh has won the approbation of the Union Minister of

Labour who expressed satisfaction in the Lok Sabha on the 12 August, 1976 that there was definite improvement in production and productivity.

Housing Plantation Labour Tamil Nadu Record

About 93% of resident workers and their families have already been provided with housing under the Plantations Labour Housing Scheme. No other State has made such remarkable progress on the housing front in respect of plantation labour. As the progress made in the electirfication of quarters of workers in plantations was found to be unsatisfactory, the Government have ordered the constitution of a Moniteering Cell in each district having plantations.

The need of the hour is family planning. We attach great importance to the motivation programme among workers and we seek the co-operation of employers in this regard. Provision has since been made under the E.S.I. scheme so that sickness benefit is paid to an insured worker up to a maximum of 7 days in the case of vasectomy operations and upto 14 days in the case of tubectomy operations, in addition to 56 days of ordinary sickness benefit payable to a worker.

As regards new apprenticeship scheme to enlarge employment opportunities to weaker sections, we have exceeded the target. As against 8,700 training places located, 8,986 have actually been filled by men and women including those belonging to backward classes and scheduled castes and the physically handicapped, the percentage of achievement being 103. The target figures of 3,000 additional seats to be located during the Fifth Plan has already been reached. Special steps have been taken for the first time to admit 129 tribal boys and girls in industrial training institutes in the State. To meet the difficulties experienced by tribal candidates admitted in such institutes, the Government have sanctioned concessions by way of stipend and lump-sum grants.

I have given this resume to assure you that everything possible is being, and will be, done to promote the welfare of labour, on the one hand, and to increase industrial and agricultural production in a climate of peace and harmony on the other.

Labour Welfare Board

The involvement of employers and employees in the labour welfare activities is in consonance with the goals we have set before ourselves and the socialistic pattern of society which we are trying to evolve. Since the 1st January, 1973, the Tamil Nadu Labour Welfaer Fund has been functioning with annual contributions from the employers and employees, covering 6,83,464 employees of 20,000 industrial establishments. The Tamil Nadu Labour Welfare Board which administers the Fund is rightly engaged in running labour welfare-cum-kindergarten schools in 10 centres in the State which benefit workers' children and include tailoring classes for women workers and wives of workers, and daily supply of meal and milk to children, apart from stipend of Rs. 30/- p.m. to each trainee.

The Government have very recently approved the proposal to put up a separate 26 bed ward for workers in the T.B. Sanatorium at Tambaram at a cost of Rs. 3.64 lakhs. I commend the decision of the Board to open 4 reading rooms in localities where there is concentration of labour — 2 at Madras and one each at Madurai and Coimbatore. It has already opened 2 reading rooms in Madras and one at Madurai.

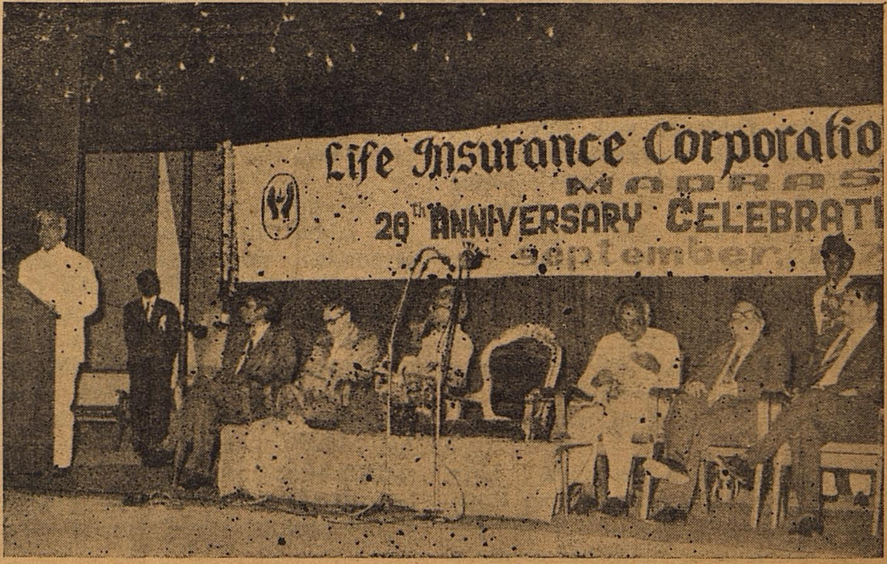
The proposal of the Board to construct holiday homes at Courtallam, Mamallapuram, Ootacamund, Kodaikanal and Yercaud for the use of industrial workers and its other proposal to construct a stadium at Madras with all modern amenities like theatre, in-door and our-door games and swimming pool as in Bombay, will, I am sure, be welcomed by the working class in Tamil Nadu.

I am glad that in order to avoid the payment of heavy rent by the Board for its office, now located in a private building, and in order to utilise a substantial portion of its funds to build up valuable assets, the Board has decided to construct a multi-storeyed building in a central place in Madras City. The Government have placed at its disposal an extent of 6.33 grounds of land free of cost for putting up this building. The plans and estimates for Rs. 35 lakhs have been approved by the Government and the construction will soon be taken up. The Board will use only one of the floors for its Secretariat and the rest will be rented out. The income from this remunerative enterprise can well be diverted to several labour welfare schemes. Let us look forward to the rising of a fine and imposing structure at this spot.

I have now great pleasure in laying the foundation stone for the new multi-storeyed building of the Tamil Nadu Labour Welfare Board.

Vanakkam.

Jai Hind.



FIVE LAKHS STERILISATIONS

TAMILNADU TARGET IN FAMILY PLANNING 1976—77

As against the target of 2,11,300 sterilisation given to Tamil Nadu for 1975-76, Tamil Nadu had achieved 2,92,060 sterilisations. It has been experienced that the percentage of acceptors of sterilisation according to different religions is more or less the same as the percentage distribution of population.

Medical Termination of Pregnancy

The Medical Termination of Pregnancy Act came into force on 1—4—1972. Tamil Nadu has done about 53,000 abortions since the inception of the programme. As on to-day there are 83 centres, both Government and Private, which perform Medical Termination of Pregnancy. An analysis of the Medical Termination of Pregnancy done in Tamil Nadu for one year (1974—75) reveal the following characteristics :

1. 42.4% of the women who underwent abortions belong to rural areas ;
2. 76.3% of the M.T.P. were followed by sterilisation.

Oral Pills :

The Oral Pill Programme was first started in this State on a Pilot Project basis. Now, there are 171 centres both in the Rural and Urban, which distribute the pills free of cost to eligible married women. On an average 2,500 cycles of Oral Pills are being distributed.

IUD & Copper 'T' Loop

26,790 mothers have accepted loop during 1975-76. Facilities are available for mothers to have Copper 'T' Loop which is an improved form of the conventional loop. They are being supplied to Post Partum Centres under the ICMR and selected Urban Family Welfare Planning Centres. There is no let up of the distribution of Nirodh and other Conventional Contraceptives. They are being distributed free of cost to all the eligible persons through the Government Hospitals, Dispensaries, Urban Family Welfare Planning Centres and Primary Health Centres. During 1975-76 as many as 1,10,476 persons have become the users of conventional contraceptives.

Post Partum Programme

In April 1969, the Government of India introduced a new Scheme on Maternity Centres approach to Family Planning called the All India Hospital Post Partum Programme. It is based on the knowledge that a woman is highly motivated to accept some method of contraception within the 3 months following delivery / abortion. During 1969-70, the scheme was sanctioned in hospitals. In Tamil Nadu Post Partum Programmes are being run by Medical College Hospitals, District Head-Quarters Hospitals and two Private Institutions making 24 altogether.

Reconalisation Operation

If the sterilised father or mother wants to get another child, due to any unforeseen calamity, facilities are available free of cost in all the Government Hospitals.

Increased Compensatory Allowance

As per the new Population Policy, an acceptor of Sterilisation will get Rs. 100/- if he has got two children or less and Rs. 80/- if he has three children and Rs. 60/- if he has four children or above.

Awards and Prizes

Tamil Nadu was awarded National award for outstanding work in the field of Family Planning for the years 1961-62, 1962-63 and 1966-67. For the year 1972-73, Tamil Nadu received a special award for the "Health Resort Centre" approach in conducting Intensive Family Planning drive which was initially tried in Thanjavur District.

During 1973-74, Madras City got the second prize on all India level for best overall performance. During 74-75, Tamil Nadu, Madras City and Madhanur Primary Health Centre got IIIrd, 1st and IIIrd Prizes respectively for best overall performance in Family Planning Programme.

Achievement under Family Planning Programme during 1975-76

	Target	*Achievement*
Sterilisation	2,11,300	2,92,060
I.U.D.	29,700	26,790
Conventional Contraceptive Users	1,44,600	1,10,476

Target for 1976-77

In order to achieve the target set for the year 1976-77 comprising 5 lakhs sterilisations, 35,500 I.U.D. and about 1.5 lakh Conventional Contraceptive a motivation programme was gone through from 16th to 30th September. During this period, concerted efforts were taken to spread the message to all the eligible couples by various media programmes. Central media units like All India Radio, Television, Field Publicity, P.I.B. etc. were all glaced to support and assist the State media units in propagating Family Planning themes during the Fortnight Celebration. Various Programmes on Family Planning were arranged in the city as well as in the Districts.

OCTOBER 2, 1976 MARKS CENTENARY OF PATRIOTIC SONG

By

Chapalakanta Bhattacharya

India is now celebrating the centenary of a song. The celebration is due because the song itself has made history by its remarkable contribution to the success of the movement for India's liberation. The part that it has played has created a legend around this song. " Bande Mataram ", as the song is titled by its first line, supplied the one spiritual force that roused the consciousness of the people, made them wake up from slumber and led them to victory in the fight for emancipation. History has recorded freedom fights in other parts of the world in which songs, slogans and cries have acted as a rousing an guiding force. In India Bande Mataram has combined in itself all these elements and has played its part by rousing, inspiring, unifying and leading a whole people. In remembering and reviewing the events of the last hundred years of its history grateful India is to-day paying homage to the song and its illustrious author who made this historic present to his motherland.

THE ORIGIN

Bande Mataram, as a song, is associated with Bankimchandra's famous Novel, Anandamath in which it is incorporated. The first part of Anandamath appeared in the Bangadarshan, a monthly/edited by Bankimchandra, in the issue of the journal in Chaitra, 1881 was in this part that Bande Mataram was published. Anandamath as a book, appeared in 1882, though published as a part of Anandamath, there was evidence to show that the song was composed earlier and by itself sometime in 1874-75. Bankimchandra's essay " My Durga Worship ", forming a part of his work, " Kamalakanter Daptar," appeared in the Bangadarshan in its Kartick issue in 1874. In this essay, inspired by emotion and imagination, Bankimchandra identified Durga worship with the worship of the Motherland. It is presumed that the inspiration which led to this identification also led to the composition of the Bande Mataram Song soon after.

True to its origin the song had a very significant incident associated with it at its very early stage. It is said, Bankimchandra was one day sitting in his room with the copy of the newly composed song on his table. The printer of the Bangadarshan needed a small matter to complete a page make-up and approached him for this. He found the copy on the table and asked for Bankimchandra's permission to take it. Bankimchandra looked up and said, " Leave it where it is. You will not realise its worth now some day the whole country will accept it with acclaim. I shall not live to see the day. You may."

The Rishi and the Inspiration

The name of the author of Bande Mataram is now mentioned with veneration with the epithet of Rishi prefixed to it. A Rishi is one to whom eternal truths reveal themselves in moments of supreme illuminations and are embodied into hymns uttered for universal prayer. In that way Bande Mataram appeared before its author not as a mere song but as a hymn to the Motherland and Bankimchandra has been acclaimed by all as the ' Rishi of Bande Mataram.'

His claim to the status of a Rishi may be justified by his other contributions also. But is justified by his authorship of Bande Mataram.

The Significance

In explaining the significance of the song it should be stated, as the leaders of the Nation have repeatedly done that the whole song is an invocation to the Motherland and a call to serve her. In this the author has very touchingly portrayed her softness, affection and beauty ; her glory and majesty, and her intellectual supremacy. To illustrate all these he has used symbol which individually by themselves or together as an integrate entity establish before the world India's greatness. The authors imagery began with Bengal, no doubt, but, judged in the context of his other works and the realisation of the Motherland revealed through his ideal it is India which rises up before the vision when Bande Mataram is contemplated upon. The song gives a philosophical background to the urge for devotion to India.

Bande Mataram in Congress

It has been stated before that Anandamath with the song Bande Mataram incorporated, appeared in 1882. The song immediately caught the imagination of the people and projected its influence over National life. In 1885 the song was reprinted in Balaka Magazine brought out by the Tagore family which also commented that " during the past three years the song has become widely famous." Along with the song the magazine printed its notation by Prativasundari Debi, presumably a niece of Rabindranath.

With its growing influence Bande Mataram naturally found its way into the Congress the newly founded All India Organisation for voicing the people's demands. The current belief is that Bande Mataram was sung in the Congress for the first time in its Session at Calcutta in 1896 when Rabindranath himself sang it. But Hemchandra, a well-known Bengali poet of pre-Tagore day bears evidence to the fact that the Bande Mataram was sung in the second Session of the Congress also held at Calcutta in 1886. In his poem titled ' Rakhibandhan ' he describes the Session and quotes the part of the song *i.e.*, its first

part which was sung in the Congress. It is remarkable to find that this is almost the same as the part formally accepted by the All India Congress Committee for being sung at the national level. Accepting Hemchandra's evidence Bande Mataram becomes co-terminus with the Congress and has since then become completely integrated with it.

Bande Mataram in Other Spheres

Congress believed in constitutional methods. But Bande Mataram cast its influence beyond the Congress and inspired and guided others who believed in a policy of direct action. The revolutionaries accepted Bande Mataram as a living message which they believed would evoke an intrepidity amongst the people and formulate their entire character. Referring to the political life of Bengal towards the close of the nineteenth century and the change brought about by Bande Mataram. Thiru Aurobindo says:

> " It was anything but intrepid at the time. It was the Mentra of Bande Mataram and the leap into revolutionary action that changed the people of the province."

Speaking at a later stage, that is during the movements against partitition of Bengal and the agitation for Swadeshi and Swaraj in the beginning of the twentieth century Thriu Aurobindo refers to the " waves of repression and depression " and concludes. " But the greatest thing in those years was the creation of a new spirit in the country. In the enthusiasm that swept surging everywhere with the cry of Bande Mataram ringing on all sides men felt it glorious to be alive and dare and act together and hope ; the old apathy and timidity was broken and a force created which nothing could destroy and which rose again and again in wave after wave till it carried India to the beginning of a complete victory."

The Government was not slow in taking action. The partition of Bengal was planned and effected in 1305 and the Government mobilised their forces to put down all opposition a circular, known as the Carlyle circular, was issued threatening educational institutions and students with penalty if they participated in preaching Bande Mataram in any way. Governmental challenge rose to the climax when even the utterance of Bande Mataram in public was banned in the East Bengal districts.

It was about this time in 1906 that the provincial political conference was going to meet at Barisal. All the leaders assembled there. The Police force was kept ready to stop the utterance of Bande Mataram. In the face of this, the leaders at the head, issued with Bande Mataram as its slogan. The Police with lathis fell upon it and broke it with tremendous violence. In this assault one of younger groups was beaten down and thrown into a road side tank. But till he lost consciousness he maintained the cry on his lips. In the end the conference itself was dispersed.

After the annulment of partition and the close of the antipartition movement the Government took up the attitude of open hostility to Bande Mataram and never took kindly to it. ehe intolerance remained and was displayed during the later stages of political movement.

In Successive Fights

Bande Mataram continued to play its part in successive fights for freedom under the leadership of the Congress facing the same opposition from the Government. During the non-co-operation movement I remember an incident at Allahabad in which a band of young Congress volunteers had shouted Bande Mataram before the Police Station. They were at once arrested and put into the lock-up. The news reached Pandit Jawaharlal Nehru. He rushed to the Police Station and there began to shout Bande Mataram himself. This time the Police were wise. They did not touch Pandit Nehru. On the other hand the youths previously arrested were released.

The fore inherent in Bande Mataram came into display once again in the last stages of our fight to shake of the foreign domination. The reactioneries in the country in league with the foreign rule made it their objective to oust Bande Mataram from the Congress and the National Forum. They carried on organised onsslaughts as it had survived the frontal attack by the Government itself years before. The Congress resisted these onslaughts with determination and took two important decisions to install Bande Mataram on a permanent footing and ensure for it a national status. By one decision it declared that the leading part of the song should be sung in all national functions and by the other it recognised for Bande Mataram a National status for all times to come.

" Bande Mataram " was originally used as a political slogan. But gradually on the All India plane the works and expression acquired an extended significance and came to grow into a National Slogan with an over-mastering influence on all aspects of the life of the people and to grace all National functions. Even a function like the All India Music Conference will commence with the Bande Mataram song. Those had the privilege to hear Pandit Onkarnath Thakur singing Bande Mataram on the rostrum of the conference with his high pitched but melodious voice will remember how the whole audience stood charmed with awe and reverence as long as the sang the song which he did almost as a devotee deeply prepossessed by its spirit.

The other important fact which has to be mentioned in connection is that Bande Mataram has unified Bankimchandra and Rabindranath. Bankimchandra, of course, had a tune for his song. But the tune that is current now and has become popular is the tune which Rabindranath set to it. This time was recordnath set to it. This tune was recorded in Rabindranath's own voice long years back. A disc of that old record has been procured by the Government and tape recorded by the All India Radio. The tape record is now played by the A.I.R. during the Rabindra Jayanti celebrations.

This is the story of a song which came into being as a spiritual realisation of a supermind and became a part of Indian history. It has been acclaimed and installed as a National Song. It has acted as a source of inspiration for a country It will continue to do so in centuries to come.

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THE DIAMOND —KING OF MINERALS AND MONARCH OF INDUSTRY

Amongst the many manifestations of nature, diamonds represent the acme of perfection in the inorganic field. It is the hardest naturally occurring substance known to man. A large ,beautiful, perfectly crystalline,flawless, lustrous diamond can hardly be matched by any substance in nature. In composition diamonds are almost pure carbon, with small impurities that only lend colour.

Though the art of preparation of synthetic diamonds has been mastered scientifically, the exact process which nature has marshalled to produce the diamond, which is known as the " King of minerals and the monarch of industry " is not known. Here is a challenge pased by nature to the students of experimental petrology.

Apart from jewellery, diamond commands respect from the field of modern technology and industry. Hence the diamond has been aplty called ' the monarch of modern industry '. But for diamond, the cutting, drilling, polishing, etc., industries would have been several folds backward ; yet we have not completely exploited the doiamnd for its various other properties. Thus it is unique not only as a perfect gem but is more perfect as the key to many industries.

Before 1725 A.D. all the world looked to India for diamonds. In that year diamonds were discovered in Minas Gerais, Brazil and later in Bihia. The first diamond discovered in South Africa was in 1866 at Hopetown on the banks of the Orange river. In USSR the first diamond bearing kimberlite occurrence was found in the Siberia in 1954.

Indian origin is ascribed to some of the famous and historic diamonds such as Koh-i-Noor, Pitt, Orlov, Sancy, Shah, Nassak, Piggot, Eugenic, Hope, Tuscany, Nizam, Taj-i-Mah, Star of Este, Shah, Saxon white, Regent, Polar star, Peace, Paul I, Pasha of Egypt, Moon of the Mountains, Jehangir, Idol's eye, Great Mogul, Dresden green and yellow, Dary-i-noor, Cumberland, Blue tavenier, Austrian yellow, Akbar Shah, etc., (Webster, 1970).

The acquaintance of early Indian authorities like Kautilya and Varahamihira (3rd Century B.C.) with diamonds is amazing and their description, distribution and economics superb, even from the modern estimates.

The ' Koustubha ' and ' Syamaantaka ' have been described as exceptional gems in the Indian epics on Krishnavatar. In his book ' Arthasastra ' Kautilya (3rd Century B.C.) instituted the nomenclature of diamonds on their occurrence, *e.g.*, Tamraparnika, Pandyakavatika, Pasikya, Chaurneya, Mahendra, Kauleya, Kardamika, Srautsiya, Hradeeya, Haimavata, etc. He also described varieties of diamond like Massorika, Kurmaka, Triputaka and Yamaka. The colour of diamond may be of cat's eye, or that of sereesh flower, or of cow's urine or bile or alum or of malati flower.

According to Varahamihira (3rd century B.C.) the diamond which occurs on the bank of river Veena is pure, in Kosala Desha it is comparable to Sereesh flower, in Sourashtra it is little reddish, in Suraparaka Desh it is black, in the Himalaya region it is little reddish, in the Matanga area it is comparable to Valla flower, in Kalinga Desha it is yellowish white, in Poundra Desha it is bluish. He has given a table to evaluate diamonds, in his book ' Brihatsamhita.'

From the above list of areas it can be seen that most of the areas known for diamonds at present were already appraised by the ancients as early as 3rd Century B.C. From the description of diamonds in a necklace in possession of the ruler of Panna about 1943 given by C.V. Raman it can be inferred that most of them were of first water quality. The Panna diamonds have been described to be of excellent quality but their exact source, primary source of course, was not known till a few years back.

Primary deposits of diamond occur in the kimberlite rocks of Wajrakarur in Andhra Pradesh, Panna in Madhya Pradesh. Secondary deposits including conglomerates and sandstones and placer deposits occur in many places. The Banganapalli conglomerate of the Kurnool formation in Andhra Pradesh and the two conglomerates which divide the upper Bhander and lower Kaimur series from the middle Rewa series in the Vindhyan region contain diamonds. The placer deposits are, however, numerous to mention here but confine to Krishna valley, Mahanadi valley, Ib, Shankh, Koel and other river valleys.

The Hopetown diamond found on the Orange river bank in 1866 weighed 21 carats and brought Africa on the diamond map of the world. From then the African production of diamond has reached 74,93,000 carats in 1970 (Webster, 1970) as compared to the world diamond production of 80,24,000 carats. In Africa, Rhodesia, Angola, Congo, Ghana, Sierra, Leone, Tansania, Lesotho Hoggar area of south-east Sahara are known for their diamond deposits. Most of them are primary deposits from kimberlite while some belong to alluvial type.

The cost of historic large diamonds is something fabulous, and the history behind such crystals are told and retold, many a time to fascinate readers. It is nevertheless a fact that the early man could appreciate the soverign qualities of diamonds and their value has not diminished. Why is the diamond so costly and for what reasons they have been valued so much is not very clear but their exceptional physical and chemical properties together with history have made them so.

Although one of the qualities of a stone to be considered as gem of high value is rarity of occurrence

By
THIRU C. KARUNAKARAN
and
THIRU S. R. N. MURTHY
Geological Survey of India.

and consequent poor production, it is not so in the case of diamonds. The present world output of diamond is something of the order of 9 tons/year of which more than 8 tons are of industrial quality. While India was the singular produce of all diamonds before the Brazlian find, presently Africa and Russia rule the world diamond market.

Diamond has exceptional physical properties. Diamond crystallises in isometric forms like octahedron, rhombicdodecahedron, hexahedron and hexoctahedron. In natural crystals, hexoctahedral form consists of maximum number of facets and diamond is a type representative. This crystal form is unique of diamond and its facets are invariably convex outwards. This morphology of diamond is described to be rather unusal (Raman and Ramaseshan, 1946) and how such symmetry occurs has not yet been resolved satisfactorily.

Extremely interesting studies on the optical, thermal, electrical and other properties of diamond have been carried out by Raman and his associates (1944, 1946 and 1947). The diamond has a high refractive index, *i.e.*, 2.4 as a consequence of which it has a high reflecting capacity. Compared to glass, diamond has four and a half times more reflecting capacity as a result of its refractive index. Diamond also exhibits high degree of dispersion *i.e.*, considerable difference in refraction for the different colours of the spectrum, as a result of which diamond produces brilliant prismatic colours on incidence of a white light beam at certain angle. This property has been referred to as 'fire.' As a result of high refractive index, any beam of light which strikes the face from within the diamond at an angle exceeding 24.5° is totally reflected internally and finds its way back to an observer with the light source. This is the key to design a brilliant diamond which is cut with faces set at carefully chosen angles in such a way that the light entering the diamond finds a face which totally reflects it back.

The hardness of diamond is 10, according to Moh's scale. This is the hardest known natural substance. This is one of the soverign properties of diamond. Indeed the name 'diamond' from the Greek word 'adamas' meaning 'unsubdued' derives its coining from this property of diamond. The hardness of diamond has become proverbial and poets use invariably 'as hard as diamond' to describe anything in terms of extreme hardness. A strong mind is compared to diamond as in a Sanskrit verse 'Wajradapikathorani.' This is one property which makes the diamond highly valuable. Diamond rules the modern industry by this property. It is not yet known what special power nature has marshalled to make so hard a material in its laboratory. This property is generally attributed to its unit form of carbon tetrahedra. It is generally observed that silicon rules the inorganic world while carbon rules the organic world. The silicates, generally rock-forming minerals, are described to have been built of units of silicon tetrahedra with four oxygen atoms connected to single silicon atom. But the structure of diamond is described as consisting of two similar Bravais lattices of carbon atoms of the face-centered cubic type interpenetrating each other (Raman, 1947). Each atom in one of the lattices is mentioned to have been linked to four atoms in the other lattice by valence bond along the four trigonal axes of symmetry of the crystal. This explains the structural strength of diamonds and the crystal in effect behaves as a single molecule (Webster, 1970).

Diamonds are classified as Type I and Type II based on their transparency limit to ultraviolet light (Webster, 1970). Type I are transparent upto 3,000 A while Type II are transparent down to 2,250 A. Further, Type II-*a* are not phosphorescent when irradiated with short wave ultraviolet light, while Type II-*b* show bluish phosphorescence when irradiated similarly and also conduct electricity. The difference in absorption of ultraviolet and infraed light by diamonds is mentioned to be due to free nitrogen in Type I diamonds—(Webster, 1970).

Generally good conductors of electricity are also good conductors of heat. But diamond is a good conductor of heat and majority are good electric insulators. This is another anomolous property of diamond. The heat in diamond is conducted not by electrons but protons (Tolansky, 1968). This property of diamond serves to distinguish them from diamond shaped quartz, zircon, etc., which are rather poor heat conductors.

The high thermal conductivity and low thermal expansion of diamond make them ideal material for machinery practice. Also diamond is phenomenally strong in its compressibility. Small high pressure experimental chambers can be made by drilling a cylindrical hole in a good diamond and with simple screw devices, pressures upto 1,00,000 atmosphere can be attained.

Diamond has another important property, low friction heat. The friction of diamond against steel is only one fifth of the friction of tungsten carbide on steel. This property of diamond enables them to have least wear and tear.

From early times the diamond has commanded respect as a piece of jewellery and many are the romances of history surrounding the diamond as a jewel, but its history in shaping the destinies of mankind in the field of industry has not fully unfolded. It is the only thing of beauty that is also of a thing of immense utility. O

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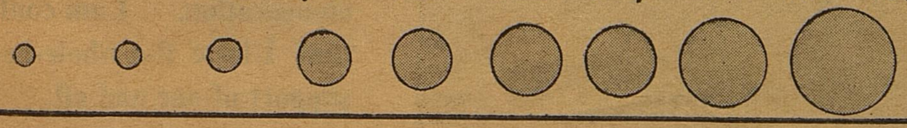


SLUM CLEARANCE BOARD NEW CHAIRMAN'S APPEAL

The new Chairman of Tamil Nadu Slum Clearance Board, Thiru K. Rajaram has appealed for whole-hearted Co-operation from all concerned in his arduous task.

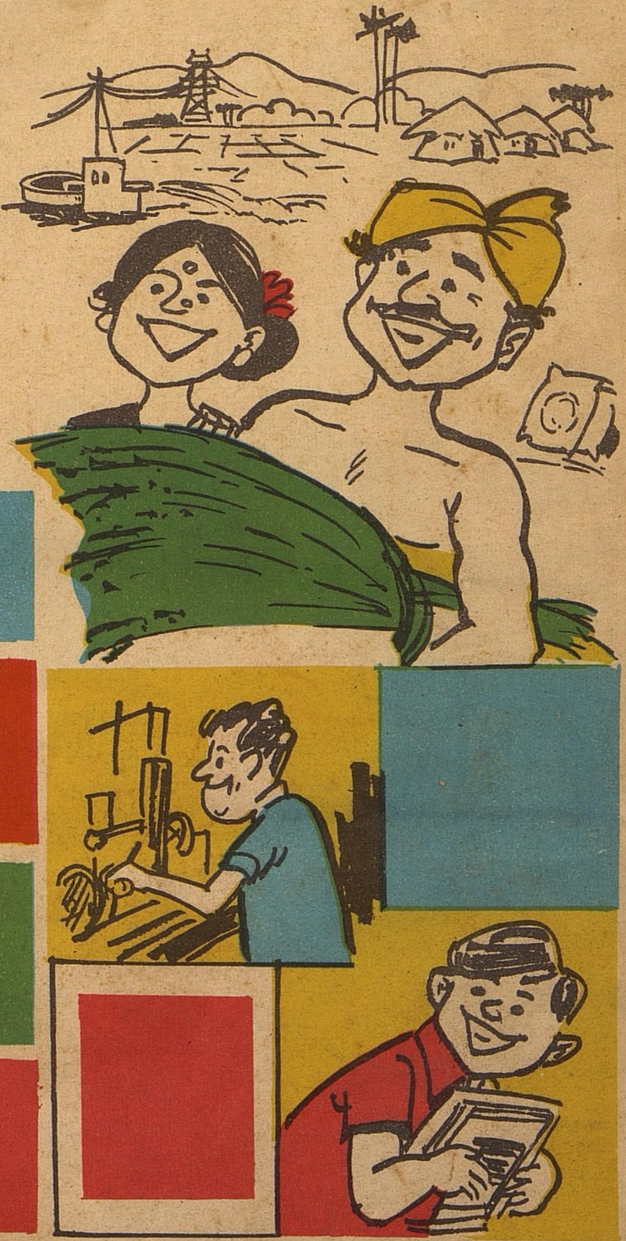
"Considering the service to the poor, particulary for Harijans, as one of the most important constructive schemes of Mahatma Gandhiji, our revered leader Thiru Kamaraj started this scheme of rehabilitation and uplift of the slum dwellers. I have taken this responsibility, to fulfill the desires of Mahatma Gandiji and our leader Kamaraj. I have come forward to serve the slum dwellers utilising the Emergency and the 20 Point Programme which are the gift of our Prime Minister Indira Gandhi. I have undertaken this great task with the hope that those who are connected with the Organisation, other friends, officials concerned and the public will extend their co-operation. I am confident that I have the whole-hearted support of one and all.

THE TRIUMPH OF VIRTUE
GREAT ARE THE VIRTUES OF FAMILY PLANNING
FOR THE SMALL FAMILY IS THE BASIS FOR HAPPY HOMES
AND A STRONG PROSPEROUS NATION
THE SMALL FAMILY IS THE NORM
IT WILL DO YOU NO HARM
...FAMILY PLANNING DEPARTMENT
Govt of Tamilnadu.

Regd. No. M. 8676-A

THE PRIME MINISTER'S

20 POINT PROGRAMME



IS A BLUE PRINT
FOR PROGRESS

IN THE FARM

IN THE FACTORY

IN THE CAMPUS

WORK IT WITH MIGHT AND MAIN

A PROGRAMME OF WIDE -ANGLED VISION
IT CALLS FOR SINGLE -MINDED DEVOTION.

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